

AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING--SHEET METAL CONTRACTING



DECEMBER, 1945

Partnership or Corporation (A Tax Comparison)	Page 76
The Future of Oil Heating	Page 87
Pittsburgh Locks Made on the Press Brake	Page 106

LAMNECK FITTINGS WILL ALWAYS BE TOPS!



"YES, WE'RE **ALREADY** GETTING

SOME CLAYTON & LAMBERT

C&L

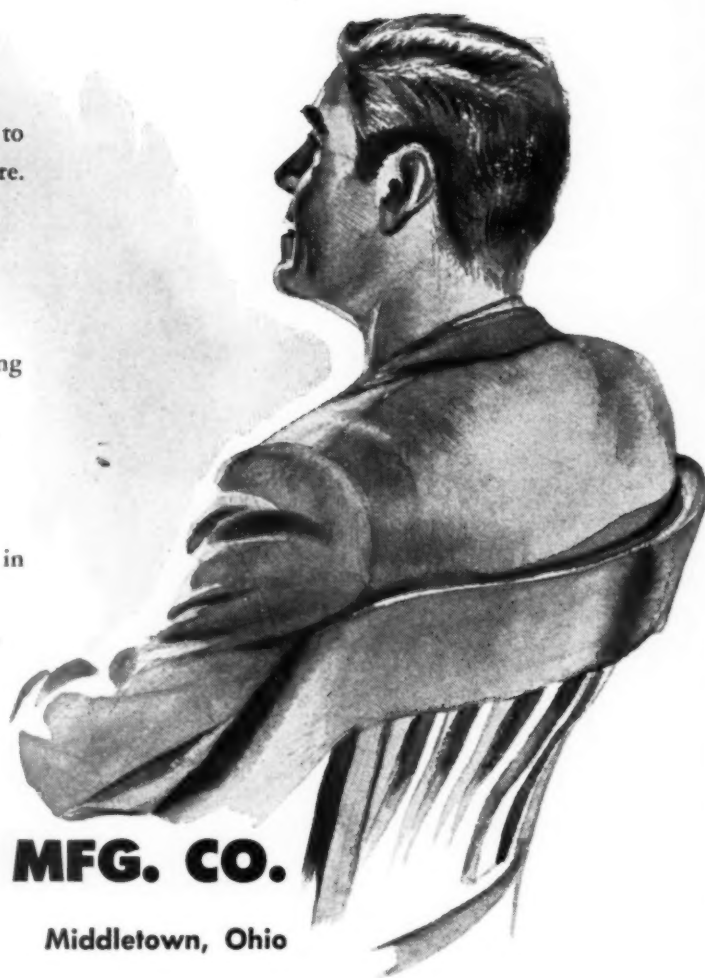
LAMNECK

FITTINGS"

You're probably making this statement to your customers and getting as much of a kick out of it as we are. For it means that you won't have to wait much longer to get back in your sales stride . . . with all the Lamneck ducts and fittings you can sell.

We know you've been patient and long suffering. You've kept on talking about Lamneck Products, dreaming about the day when you wouldn't have to say "No" to anybody. Well, that Great Day is just about here.

For already we're making shipments in small quantities . . . and, as fast as we can get rollin' . . . we'll get back into *full-time production*. So get set . . . ready to go. We're going to help *you* be one of the busiest Lamneck users in America! Write for the name of your nearest distributor and for complete details.



CLAYTON & LAMBERT MFG. CO.

Middletown Division

C&L

Middletown, Ohio





Take the small blower job pictured above, for example. This 3000 cfm. blower is an integral part of a boiler-automatic stoker installation at a midwestern hosiery manufacturer's plant. It furnishes the correct amount of forced draft called for by the boiler to supply heat and process steam for the plant's operation. Not a glamorous job, you'd say . . . but rather a standard, everyday blower application, duplicated many times over, which

calls for unfailing dependability—plus a minimum of maintenance. That's why usAIRco Blowers are first choice where performance counts!

From the design on the engineer's table to the final test of the finished blower itself, usAIRco builds top quality into the product. That's the reason usAIRco Blowers have proved over the years that they're *great* blowers. That's why you hear it said so often: "You can count on usAIRco Blowers!"

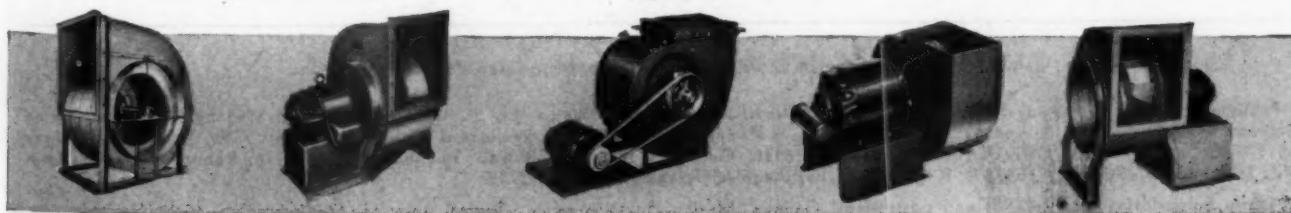
UNITED STATES AIR CONDITIONING CORPORATION

Makers of the most complete line of air handling equipment • Factory Representatives in Principal Cities

NORTHWESTERN TERMINAL



MINNEAPOLIS, MINNESOTA



THERE'S A usAIRco BLOWER TO MEET YOUR EXACT REQUIREMENTS

AMERICAN ARTISAN

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

WITH WHICH ARE MERGED

**FURNACES
SHEET METALS**

AND

**Warm-Air
Heating**

J. D. Wilder, Editor

A. A. Kennedy, Assistant Editor

December

Vol. 114, No. 11

1945

Founded 1880

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In This Issue

FROM now on every man in business will likely find that one of his most worrisome problems centers around ways and means of reducing costs. Costs can be reduced, first, by getting more production from the men and machines used and by eliminating every expense not absolutely necessary to the operation of the business. Reducing these costs is one of the jobs you expect to do.

But there are other costs which are not so easily or directly controllable by management. Foremost among these is taxes.

We expect to pay taxes. We expect to take every tax reduction which is legitimate. But what is legitimate and what is not is a problem which business men may find rather difficult to answer.

So American Artisan has been publishing and will publish from month to month a wide variety of articles on this problem of taxes.

In this issue there are several such articles. On page 76 is an article showing the tax comparison between doing business as a partnership or as a corporation. If your present form of business is too costly—change it.

On page 80 Arthur Roberts discusses tax reductions which are legitimate in the repair and modernization of your own place of business. On page 82 an article explains how necessary it is for government to plan its expenditures on a predetermined budget—only if government does live within its income can you expect any reduction in your taxes.

What are the oil heating industry folks thinking about the future of oil heating? Some of the thinking is described on page 87 by Oil Heat Institute Director Hess—you may find the answers to some of your own questions in this article.

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COAL *Gravity* **OIL** *Forced Air* **GAS**

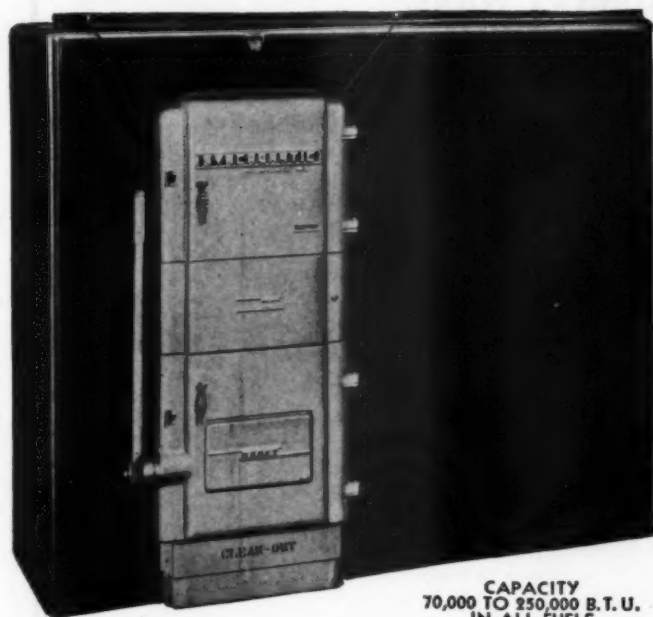
MODERN STEEL FURNACES



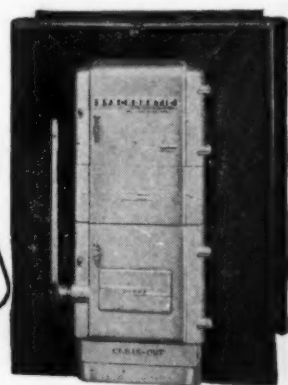
FACE CURTAINS *are Passé!*

SYNCROMATIC

is **FRESH** and **MODERN**
IN BEAUTY » » SAFETY » »
ECONOMY » PERFORMANCE



CAPACITY
70,000 TO 250,000 B.T.U.
IN ALL FUELS



THE GRAVITY

Proven

BY TEST IN A GREAT RESEARCH
LABORATORY AND BY ENTHUSIASTIC
USERS ALL OVER THE UNITED STATES

Enjoy the Respect of Your Customers

PROFIT WITH AMERICA'S LEADING MODERN LINE
OF STEEL FURNACES... **SYNCROMATIC**
FOR THE BEST IN LIFE...

SYNCROMATIC CORPORATION

5110 NORTH THIRTY-FIFTH ST., MILWAUKEE 9, WISCONSIN

A WARM GOOD MORNING,
BOSS = IT'S 72° INSIDE!



HELP YOUR CUSTOMERS HAVE A WARM GOOD MORNING

Install a Crise Control on every customer's hand-fired furnace — steam, hot water, warm air.

Set control at night for a warm house in the morning. Re-set in the morning to maintain comfortable daytime temperature.

WHAT'S IN IT FOR YOU?

- ★ Crise quality Control cuts coal consumption as much as 20% each season — soon pays for itself — creates good will for you.
- ★ Your customers are ready to buy — they must stretch their coal this winter.
- ★ Not a luxury, all your customers can afford them.
- ★ A generous margin of profit for you.
- ★ Crise Controls are quick and easy to install — you handle more jobs and make more money, in less time.

**See Your Crise Jobber Today —
he has Crise controls in stock.**

W. Lerch

Executive Vice-President



The **CRISE**
MANUFACTURING CO.
COLUMBUS 16, OHIO



What we learned from NATION-WIDE TEST INSTALLATIONS of the NEW JANITROL Gas Conversion Burner!

1. Over a period of a year, there were practically no signs of wear or deterioration . . . the result of skilled engineering and sound construction.
2. Installation is simplified due to accessibility of operating parts and controls, and greater over-all compactness.
3. In all types of furnaces . . . gravity, forced warm air, steam, or hot water . . . these gas burners provide dependable, adequate heat in all kinds of weather.
4. The high efficiency of the burner makes for low fuel bills.

5. Customer satisfaction is assured because this cleanest, most convenient method of heating is quiet and service-free.

Yes, for a full year the new Janitrol Gas Conversion Burners were tested in actual home installations. Only after they had proved themselves in every detail of operation did Surface Combustion put them on the production line.

That's why when you see the new Janitrol Gas Conversion Burner, you'll know that although in design and performance it is as modern as tomorrow, it has behind it a substantial record of proven performance.

Write today for complete specifications on these new models.

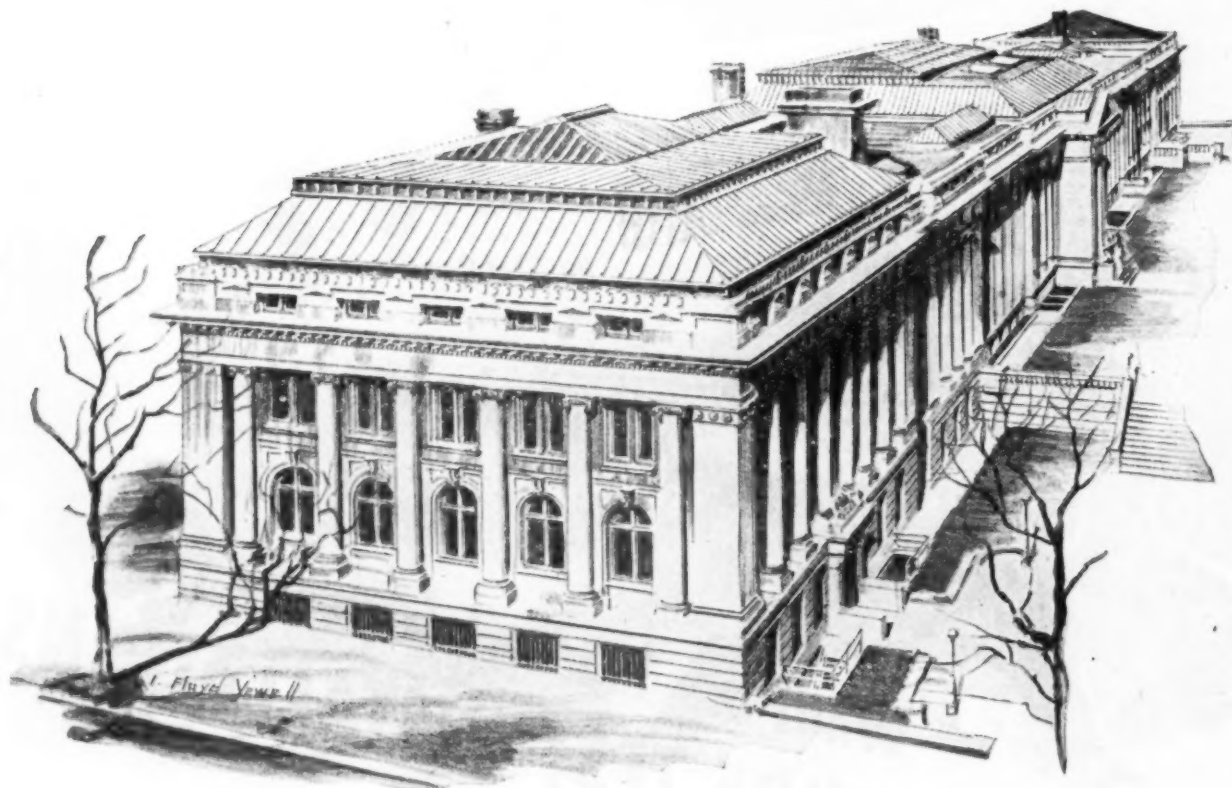
Surface Combustion Corporation, Toledo 1, Ohio

Janitrol

**GAS-FIRED
HEATING EQUIPMENT**



Front to rear, buildings of the Museum of the American Indian, Heye Foundation, Hispanic Society of America and the American Numismatic Society.
Architect: Charles P. Huntington. Anaconda Copper Roofing installed by Nicholson & Galloway, Inc., Sheet Metal Contractors.



For 40 Years, the Cost of Maintaining these Copper Roofs has been Negligible

AMONG the fine cultural buildings of the city of New York are the impressive structures illustrated. Included in this group are buildings of the Hispanic Society of America, the American Numismatic Society, the American Geographical Society of New York, and the Museum of the American Indian, Heye Foundation.

Three of these buildings were erected in the years 1903 to 1905. The Museum of the American Indian was built later, in 1916. All were roofed with Anaconda Copper by the well-known sheet metal contractors,



American Geographical Society Building, another unit of the group illustrated above.

Nicholson & Galloway, Inc.

A recent inspection by Mr. John E. Nicholson, president of this company, disclosed that these copper roofs are all in excellent condition. Since their installation, cost of maintenance has been negligible.

Anaconda Copper for roofing lends itself to any decorative plan. It grows old *gracefully*, providing low cost roof protection. Because of its uniform temper, Anaconda Copper can be readily installed. For detailed information, write for Publication C-3.

4203

Buy VICTORY BONDS . . . Help Assure World Peace



Anaconda Copper

THE AMERICAN BRASS COMPANY—General Offices: Waterbury 88, Connecticut
Subsidiary of Anaconda Copper Mining Company • In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

CHECK THE FACTS

AND YOU'LL FIND...

**90.4% OF ALL
OIL-O-MATICS
INSTALLED IN THE
PAST 20 YEARS
ARE STILL ON THE JOB!**

Yes, more than 9 out of every 10 Williams Oil-O-Matic Oil Burners installed in the past 20 years are still on the firing line. Here's a record that *any* manufacturer of *any* mechanical product could well be proud of... and a record that is all the more amazing when you consider that the average life of an *ordinary* oil burner was estimated by the WPB to be not more than 10 years! Do you know of any other burner manufacturer who can match this record?

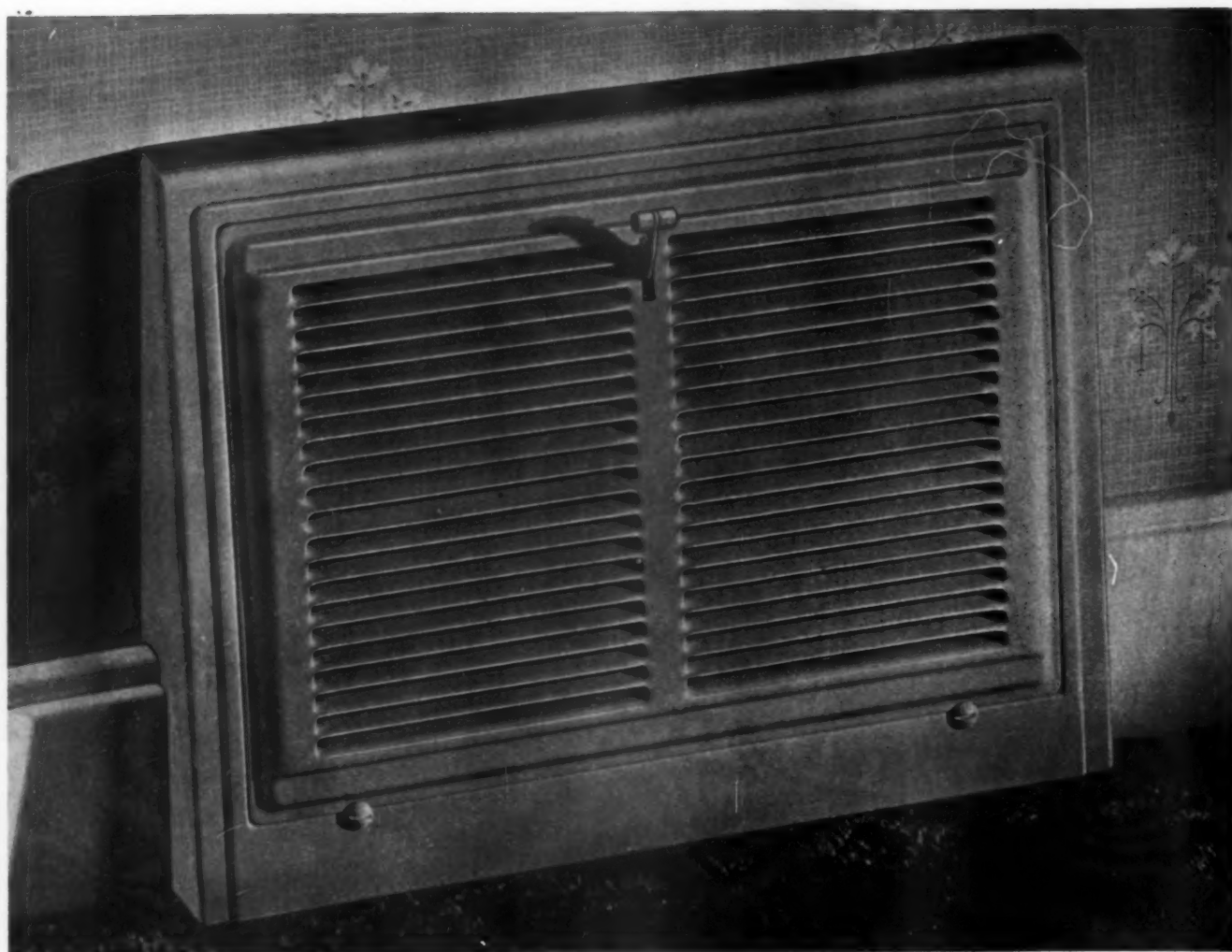
An Oil-O-Matic is not an ordinary oil burner. Its famous Lo-Pressure principle, plus precision construction, puts it in a class by itself for long, trouble-free life and proven economy. All of which adds up to owner satisfaction that results in repeated endorsements to prospective Oil-O-Matic purchasers... and easier selling and extra profit for Oil-O-Matic dealers.

WILLIE O-MATIC says: "War-time readjustments have opened up a few choice territories for the Oil-O-Matic franchise. Yours may be one of them. Phone, wire or air mail your inquiry—Attention: New Business Department."



**WILLIAMS
OIL-O-MATIC
HEATING**

**WILLIAMS OIL-O-MATIC DIVISION
WELLS FARGO BANK COMPANY
BLOOMINGTON, ILLINOIS**



Auer **HEAT • RITE** *for Gravity*

One of the most popular models ever brought out by Auer, the Heat-Rite gives you both top efficiency and smart design in a warm air register. It has abundant open area, bendable fins for upward, level, or downward air flow. Two-piece, with removable face, and made for easy, neat, tight installation. Streamlined design makes this a register of refinement and good taste in any surroundings. Furnished for baseboard or wall location, also for baseboard intakes.

A well made, substantial register, Heat-Rite is a credit to any job—yet is priced no higher than the average warm air register.

Ask for Auer Register Book showing all models for air conditioning and warm air. Special Grille Catalog "G" also sent on request.

THE AUER REGISTER CO.

3608 Payne Ave.

Cleveland 14, Ohio

Auer **REGISTERS**
& GRILLES for AIR CONDITIONING & GRAVITY



You are sure of delivering True Indoor Comfort and winning the good will of satisfied customers ... when you install a Mueller Climatrol System

The way to a home-owner's heart is through his heating system. It pays to sell one that is *basically sound*—capable of delivering these essential "comfort factors":

- | | |
|---|--|
| 1. Temperature control. | 2. Humidity control. |
| 3. Proper movement of air. | 4. Introduction of fresh air. |
| 5. Removal of dust, pollen, and other foreign matter. | 6. Removal of bacteria conveyed on dust. |

— and that offers a complete range of choice as to type, size, and fuel used. In short, a Mueller Clima-

trol System — basically designed to condition and handle air — backed by an 88-year performance record — *specifically* designed for efficiency with *each* of the major fuels (gas, oil, or coal)—smart and modern in appearance — nationally known and nationally advertised. Suitable models for old or new homes in a wide range of sizes, types, and prices. Be a Climatrol "comfort merchant," for all-around satisfaction. Write for bulletins. . . . L. J. Mueller Furnace Co., 2010 West Oklahoma Avenue, Milwaukee 7, Wisconsin.

Climatrol

REG. U. S. PAT. OFF.

D-55

CHRYSLER AIRTEMP



A Market for Every Dealer— A Dealer for Every Market

The Chrysler Airtemp line of heating, cooling and refrigeration, automatically commands a major market in any community. The style and engineering principles incorporated in each individual product reflects superiority and will be offered to the consumer at prices that reflect mass production economies. With strong national advertising, tailored merchandising and selling practices to assist the dealer, volume sales will be a normal result. The dealers handling Chrysler Airtemp will be given territories for intensive sales cultivation that are fair and extremely productive. Chrysler Airtemp has a wide range of

cooling and refrigeration products, including the famous "Packaged" Air Conditioner pioneered and designed to meet practically every need in temperature-humidity control equipment.

The Chrysler Airtemp Triple Line . . . Heating, Cooling, and Commercial Refrigeration . . . offers dealers an unusual opportunity for 12 months' profitable operation. Dealer agreements will be available for any single Chrysler Airtemp Line . . . any two lines . . . or for all three lines. • Airtemp Division, Chrysler Corporation, Dayton 1, Ohio. In Canada, Therm-O-Rite Products, Limited • Toronto, Ontario.



THE 4 FUNDAMENTALS of CHRYSLER AIRTEMP DEALER OPERATIONS

1. Engineered Installation
2. Proper Display
3. Outside Selling
4. Customer Service



Buy Victory Bonds—"Listen to the music of Andre Kostelanetz, Thursdays, CBS, 9:00 p. m., E.W.T."

HEATING • COOLING • REFRIGERATION

Through powerful advertising

in SIX leading magazines ...



We're again ACCELERATING THE SWING

to Forced-Warm-Air Heat

The makers of DUST-STOPS* are at it again—pulling a long, strong oar in behalf of the forced-warm-air heating industry.

Starting in the October 20th issue of the Saturday Evening Post—and November issues of five other popular, large-circulation magazines—powerful, colorful advertisements are telling and selling the advantages of this better winter air conditioning to American Homemakers.

Part of the comprehensive, long-range program, this advertising will continue month after month well into the summer. It will help focus consumers' attention on this truly modern type of home air conditioning. Most important of all, it will help you—and all in the industry—sell warm-air heat to builders of new homes and to other folks who are remodeling.

*T. M. Reg. U. S. Pat. Off.

OWENS-CORNING

FIBERGLAS CORPORATION

"Your partner whose
Actions speak louder than words"

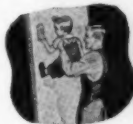


Some things to Remember



For your greater comfort, convenience and thrift, put a forced-warm-air heating system at the top of your list of "must-haves." Forced-warm-air heat is economical heat—clean heat. It will reduce house cleaning work, save redecorating costs—will help to keep your furnishings attractive and make them last longer.

Have control in your heating system. Think of the added comfort, sensitivity to the weather, when you set the thermostat and when you arise.



Forced-warm-air heat is efficient heat. And the Dust-Stop* air filters (used in most modern systems) help keep it highly efficient. They screen dirt and lint out of the system while permitting the free circulation of clean, warm air. When filled with dust and lint, the filters are replaced easily, quickly and at very low cost, with clean new Dust-Stops.

How much dirt does efficient Dust-Stop remove from the air in your home. You'll be delighted and convenience of a forced-warm-air heat, now, to insist on forced-warm-air heat, or when you modernize your present home.

Owens-Corning Fiberglas Corporation, Toledo 1, Ohio, U.S.A. (In Canada, Owens-Corning Ltd., Ontario, Canada.)



Some things to Remember



FORCED-WARM-AIR HEAT deserves a place at the top of every home planner's list. Certainly, no other item in the home—pays bigger dividends in your round comfort, convenience and over-all economy.

AUTOMATIC CONTROL of temperature assures indoor comfort, regardless of how cold it may be outdoors. And your forced-warm-air system can add to your comfort in summer (by circulating cool night air through the house at the end of a hot day).



HIGHLY EFFICIENT and economical, a forced-warm-air system is noted for its clean, healthy heat. You'll be delighted at how little it will cost you to operate. Delighted, too, at how clean your home stays—saving work and redecorating costs.

YOU'LL FIND forced-warm-air units available for every type of home—for use with every type of fuel. If you are planning to build, buy or remodel—tell your architect, builder or heating contractor you want the advantages of clean, warm-air heat.

DUST-STOP* AIR FILTERS are standard equipment in most modern forced-warm-air units. Replacements at low cost, available in every community. Dust-Stops are a product of Owens-Corning Fiberglas Corporation 61-87 Nicholas Building, Toledo 1, Ohio (In Canada, Fiberglas Canada Ltd., Ontario, Ontario).



DUST STOP
Air Filters
FIBERGLAS product



New Ideas

(SUCH AS BRYANT PANEL HEATERS)



Forty-two different boilers for steam and hot water heating

Heavy CAST IRON heating element and baffle plates assure long life for the GF-56



BOILERS



GRAVITY FURNACES



Destined to become popular for small homes heating, this STEEL gravity furnace fits the modest building budget

All Bryant boilers have CAST IRON sections for long life and efficient operation



This basement-type model with STEEL heat exchanger provides complete winter air conditioning



WINTER AIR CONDITIONERS



The Vertical model is a moderately priced, spacesaving unit with STEEL heat exchanger

CAST IRON heat exchanger also is featured in the BA-88 model



WATER HEATERS



The new streamline water heater matches the modern note of many postwar home designs

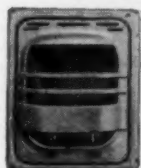
Six new automatic water heaters are included in the Bryant Heater postwar line

Closet space is sufficient room for the VB model with CAST IRON heat changer

will sell more gas heating equipment

Postwar

WALL AND SPACE HEATERS



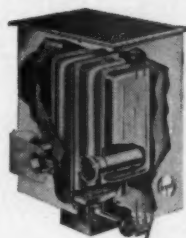
Bryant wall heaters fill the need for moderately priced, non-vented installations



Where circulated heat is required, this Console model does the job thoroughly and efficiently



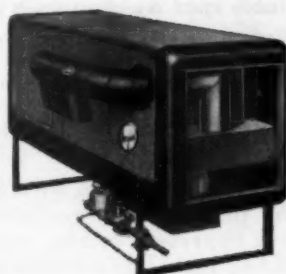
New portable space heaters are built in modern streamline designs



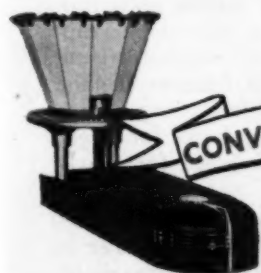
Floor furnaces in four types to fit every requirement



Unit heaters for garages, stores and shops



Forced-air, horizontal space-saver unit for attic installation



CONVERSION BURNERS

Conversion burners to meet postwar modernization demand

Now you will find greater opportunity than ever before in selling the Bryant Heater line. Research and development laboratories of Bryant have provided new products and improvements that are practical, proved and salable. One "new idea" product is the Bryant Panel Heater shown at the top of the facing page . . . an attractive, vented, any-room-in-the-house heater which will go big in both modernization and new home markets.

With the Bryant line, you can offer equipment within the means of every income group and to fit every home heating need. You will have durable, long-life boilers for steam and hot-water heating systems . . . winter air conditioners and gravity furnaces in both cast iron and steel heat exchanger models. There are new and improved floor furnaces, wall and space heaters for small home and individual room heating jobs . . . a long line of specialties such as conversion burners, unit heaters, attic-installed heaters . . . all this, plus a brand-new group of Bryant automatic storage water heaters.

You will have the strong backing, too, of national advertising . . . for Bryant's 1946 campaign will total millions of impressions in many popular magazines during the coming year. In addition, there will be powerful new selling tools for your local effort . . . radio and newspaper advertising materials for use in *your own city* . . . literature that helps put the name on the dotted line.

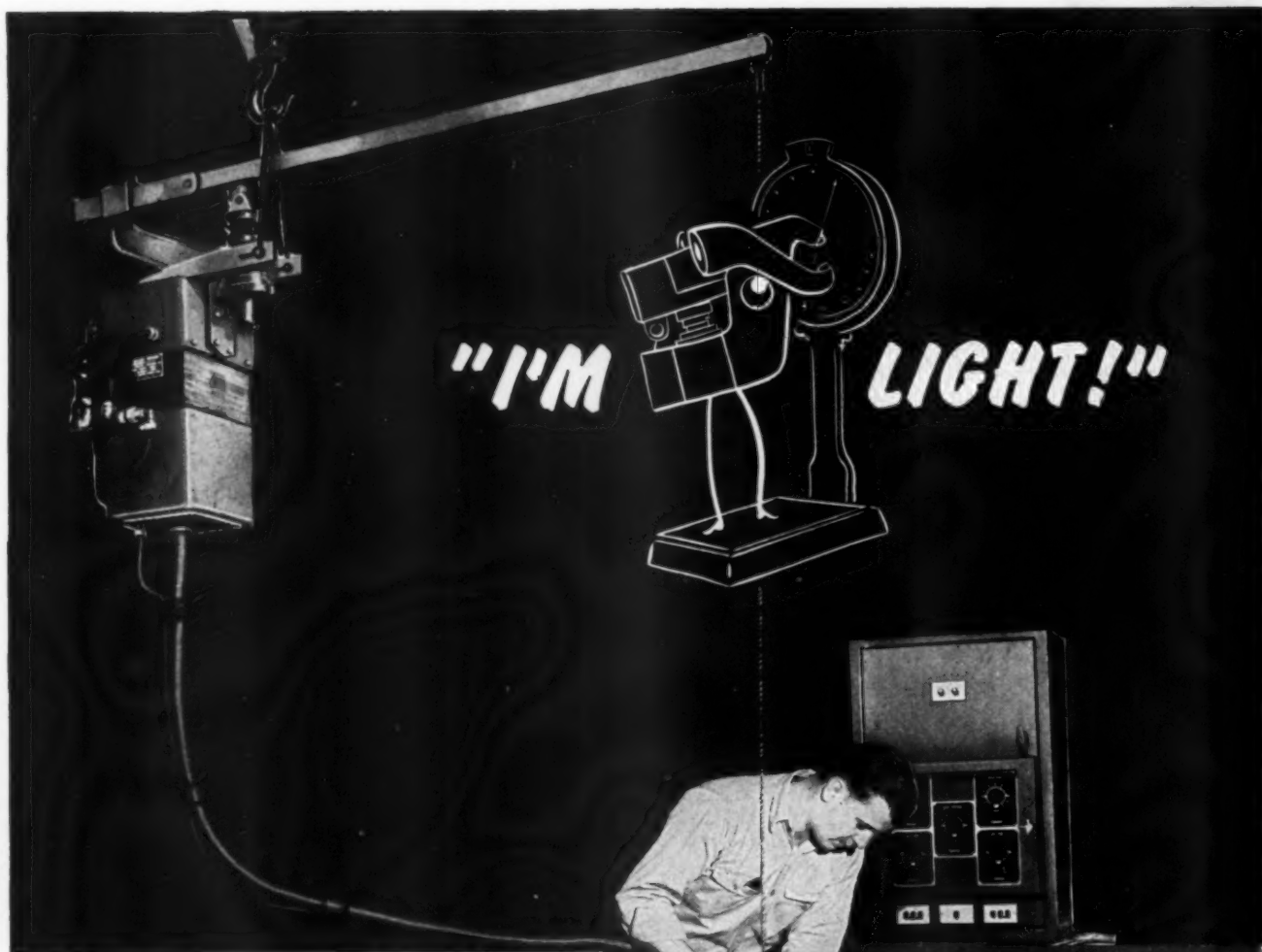
Get the whole "new idea" story. Ask your Bryant distributor to show you the easel presentation titled "Postwar Picture of Home Heating". Learn how, in the greatest heating market ever, *you can go places with Bryant!* Bryant Heater Company, 17825 St. Clair Ave., Cleveland 10, Ohio—One of the Dresser Industries.

bryant
GAS
HEATING



LET THE PUP BE FURNACE MAN

The most complete line of gas heating equipment in the nation!



Sciaky portable spot welding units are designed with the accent on lightness – both in guns and cables.

The use of high tensile metals plus skillful design, saves weight . . . makes the gun easier and faster to handle . . . more accessible, too.

Both pneumatic and hydraulic units are available in ratings of 50, 75 and 100 KVA. Sciaky electronic control units provide electronic control of welding sequence, current interruption and welding heat. Transformers may be suspended from any type hoist for moving about. Special features include high-efficiency, light weight flexible cables, fast acting electro valve and booster, and adjustable balancing device for larger guns. A variety of standard gun types, designed for nearly every job, are available.

Hydraulic units make efficient use of water. System is automatically refilled from same line supplying cooling water in case of leakage. Rust-proof materials are used throughout.

Write for bulletin 122-A

Makers of Quality Resistance Welding Equipment.
Offices in New York, Washington, Detroit and Los Angeles.
Representatives in principal cities. Plants in London and Paris.

**4905 West 67th Street
Chicago 38, Illinois**

SCI AKY BROS.

*Here's the name
everybody sees...*

**BUT IS IT
SELLING FOR
*You?***

■ Are you getting the benefit of this unique advertising space on your customers' living room walls . . . or are you giving it away to somebody else?

Your manufacturer's name on a thermostat may seem a small detail, but it's important to you in building big volume sales. When your customers proudly tell friends how much they enjoy the comfort, convenience and economy of their new automatic heating system . . . you want all the credit to go to the name in which you have your big investment. What better means of advertising is there than your product's name on your customers' living room walls . . . a constant reminder of you and your equipment.

That's one of the principal advantages of Coordinated Automatic Heating. It brings you controls carefully pre-selected for quality by your manufacturer and merchandised under the same name as the automatic heating equipment you handle. It makes controls sell for you . . . not against you!

Moreover, pre-selected controls, built by Perfex are your assurance of superior performance and dependable, trouble-free operation. Their quality construction and engineering advancements are best evidenced by the many famous automatic heating names you see on them.

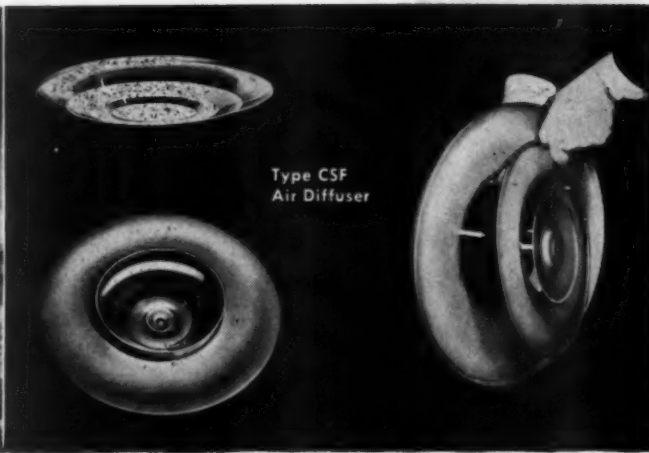
*Fuel-Saving
Starts With*
CONTROL



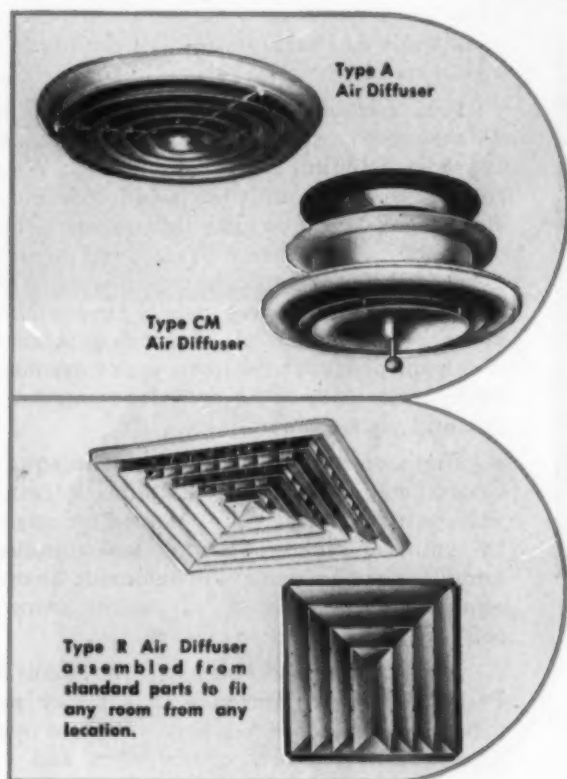
 **PERFEX**

CORPORATION
500 W. OKLAHOMA AVENUE
MILWAUKEE 7, WISCONSIN

MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE-MARK
NAMES OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS



Beauty plus Simplicity **WITH AGITAIR DIFFUSERS**



You can depend on Agitair's high performance, too. That's because Agitair's restricted-type orifices are carefully designed to utilize *all* the energy of the incoming air for rapid mixing and thorough circulation—with no noise, no drafts, and no hot or cold spots.

High-velocity streams of incoming air set up turbulence *outside* the Agitair. It's this turbulence that rapidly, forcibly, mixes incoming with room air, and it's the high energy that circulates and aspirates the air.

Agitairs are so simple they can be installed with a few quick fastenings. Exteriors give you maximum beauty for any job.

Specify Type R Rectangular Diffusers for average rectangular or L-shaped rooms, and for off-center or side-wall mounting; Agitair Circular Type CSF or Type A for large areas or square rooms; Type CM and Navy Standard for marine.

WHAT AGITAIR ENGINEERING MEANS TO YOU —

Every feature of Agitair products has been designed and tested by experienced engineers for maximum on-the-job performance. Agitair representatives are ready to help you plan the job right by recommending the proper type and size. Ask for the Agitair Diffuser Design Data Book.

AT 3 KEY POINTS IN AIR CONDITIONING—AGITAIR SERVES BEST

1
FILTERS

2
DIFFUSERS

3
EXHAUSTERS

and also
HOT WATER
GENERATORS
etc.

AIR DEVICES, INC. • 17 EAST 42nd STREET • NEW YORK 17, N. Y.

OK *Moncrief's Dealers*

Complete Announcement of
Moncrief's **NEW** Postwar Line
of GAS FIRED Heating and
Air Conditioning Equipment
in the January issue

MONCRIEF

THE HENRY FURNACE CO., MEDINA, O.

THE HENRY FURNACE CO., MEDINA, OHIO



Our gift to you, were it humanly possible, would be all the WEIR-MEYER Equipment that you need to make this a thrilling Christmas for your waiting WEIR-MEYER customers.

Yes, we're back in full civilian production, but the orders that piled up under wartime restrictions just can't all be filled at once. They are being filled—in the sequence received—and fast! Your patience will be rewarded, for post-war WEIR-MEYER Equipment is truly Modern Heat—in design, performance, and customer satisfaction.

From our entire organization . . .

Season's Greetings!



THE MEYER FURNACE CO.

Weir and Meyer Furnaces . . . Air Conditioners
for COAL—GAS—OIL

Since 1866

Peoria 2, Illinois

WEIR-MEYER MEANS *Modern Heat*



ALL THESE ALLOYS NEED ONLY 3 electrodes

To the welding of carbon-molybdenum steels, Westinghouse now brings the excellent characteristics of its Flexarc electrodes for mild steel. It offers a new group of only three welding rods for low alloy cast steels and low alloy, high tensile rolled steels where strengths higher than those obtainable with mild steel electrodes are required.

For d-c all-position welding, the AP-MO electrode is used with reversed polarity. For both a-c and d-c, the ACP-MO and DH-MO may be used—the former for all-position welding, while the latter is best fitted for flat, deep groove and horizontal fillet welding.

This small group of rods brings the advantages of simplified inventories and high production speeds, together with maximum strength and quality, and reduced costs. Operators will like them for smooth arc action, easy metal and slag control and an excellent weld appearance.

For further information about this group of quality welding electrodes, write for booklet B-3661. Write to Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-21366

JALTEN • RDS STEEL • YOLOY • CHROMANSIL • MAYARI-R
MAN-TEN • COR-TEN • SIL-TEN • A.W. DYN-EL • N-A-X
HIGH TENSILE • SAE-X-4130 • SAE-X-8620 • CARBON-
MOLYBDENUM • VANADIUM • SILICON-KILLED STEELS
AND OTHER LOW ALLOY, HIGH TENSILE STEELS



Flexarc carbon-moly electrodes are excellent for welding high pressure, high temperature piping.

ADVANTAGES OF *Flexarc* CARBON-MOLY ELECTRODES

AP-MO (E-7010), ACP-MO (E7010/E7011), DH-MO (E7020/E7030)

1. Excellent physical properties on welds made in any position.
2. Unusually high density and soundness of welds as revealed in x-ray tests.
3. Smooth, even transfer of metal with low spatter loss.
4. Metal washes up well on side walls without undercutting.
5. Easy arc control.
6. Easy slag removal with minimum difficulty from entrapped slag.
7. Uniformly high molybdenum content arc deposited metal—consistently within limits 0.04% to 0.06%.



Westinghouse
PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

*Low Alloy
Electrodes*

**YOUR PATIENCE
+
OUR PLANNING**

RESULT

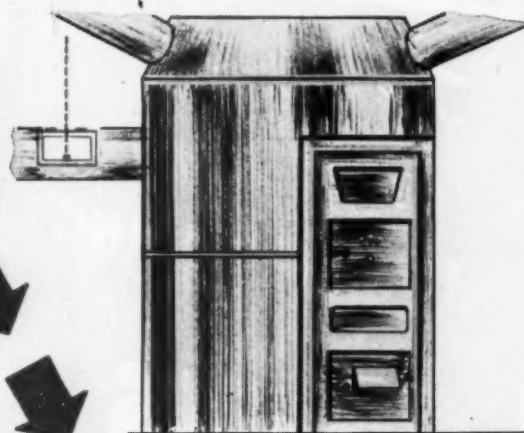
**The Finest in Postwar
GAS FIRED HEATING AND
AIR CONDITIONING EQUIPMENT**

by
Luxaire

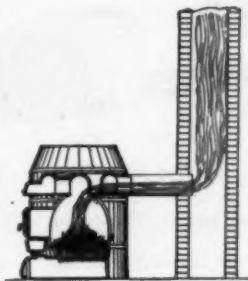
**See Announcement
in the January Issue**

THE C. A. OLSEN MANUFACTURING CO., ELYRIA, OHIO

WHAT'S WRONG WITH *Both* THESE PICTURES?

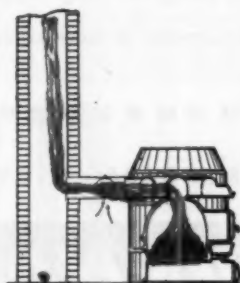


TWO SIMPLE ILLUSTRATIONS PROVE THE NEED FOR A FIELD DRAFT CONTROL



The diagram at left illustrates what takes place in the average heating plant not equipped with a **FIELD DRAFT CONTROL**. When the chimney draft is greater than necessary for proper draft and combustion, heat is drawn up the chimney and wasted. Fuel wastes run as high as 25%!

At right we picture for you the change effected when a **FIELD DRAFT CONTROL** is installed. The barometric pressure opens the gate, maintaining the proper draft to carry smoke up the chimney, but allowing excess draft to by-pass through the opening in the Control, the opening varying according to the pressure of the air upon the gate. Fuel savings run as high as 25%.



THE SAME THING!

Why are both heating units inefficient, wasteful, old fashioned? Because neither is equipped with a **DRAFT CONTROL**. EVERY HAND-FIRED FURNACE in your area is a prospect for a **FIELD BAROMETRIC DRAFT CONTROL**. Installation is easy; profits substantial. And sales come easy with a possible fuel savings up to 25%, longer banking, more even burning, fewer trips to the basement. Write for complete information.



FIELD CONTROL DIVISION

OF H. D. CONKEY & COMPANY

MENDOTA, ILLINOIS

For more profit!

**SELL
VICTOR**

*The ONE line
that has*
HEAT RADIATING

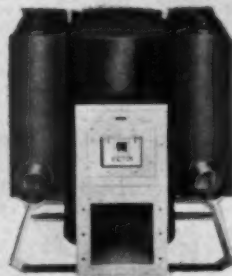
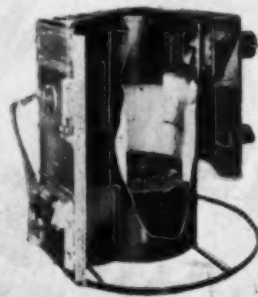
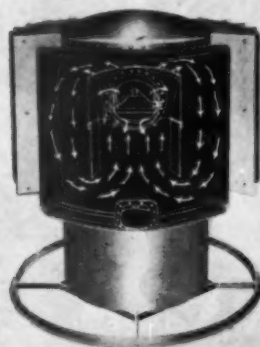
FINS

Tear this off

Paste on your letterhead
and MAIL to get full in-
formation on the complete
VICTOR LINE

Signed _____

Title _____



Capacities up to
2,250,000 B.T.U.

Every easily installed, customer satisfying VICTOR FURNACE makes you more sales with trouble-free profit. The complete line, from factory Jumbo to gas or oil burner, enables you to compete successfully for ANY size job. A fast selling line with exclusive features of genuine merit and one which has given long lasting satisfaction since 1890 is your assurance of more sales — more money in 1946.

FURNACES • STOKERS • OIL BURNERS • GAS BURNERS • BLOWERS • ACCESSORIES

HALL-NEAL FURNACE Co.

VICTOR Quality Furnaces Since 1890

1326 N. CAPITOL AVENUE • INDIANAPOLIS 7, INDIANA

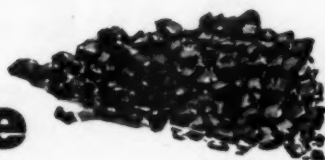
H

elp



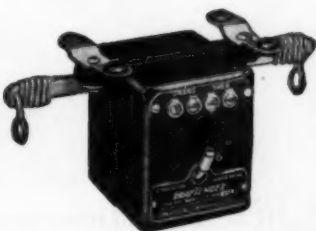
your customer

save



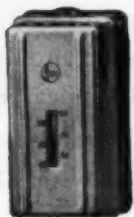
coal

with



PENN

DRAFTENDER



CONTROLS

It won't be long now before freezing cold weather will have homeowners worrying about their coal supply. For this winter, like the last, is going to see great fuel shortages—and it will be vital that fuel be made to last as long as possible.

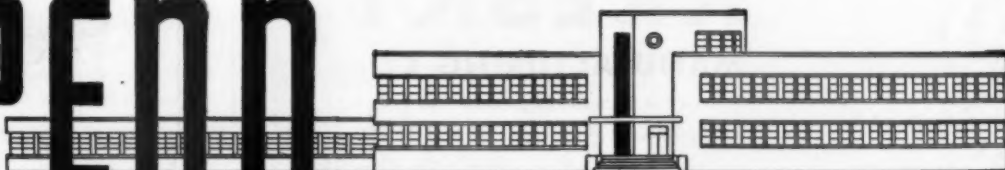
By installing Draftender Controls you can help the owners of hand-fired heating plants stretch their coal supplies a lot further. These efficient, low-cost devices eliminate the waste of over-heating common with hand-controlled dampers . . . and assure more efficient heating.

PENN DM-1 Draftender Control sets include, in addition to the damper motor, Temtrol—the heat-anticipating thermostat. They can be installed on any hand-fired system—whether warm

air, steam or hot water—and are available *now*—for prompt delivery.

In selling Draftender Controls, you are not only helping your customer to save coal, which the government is urging every citizen to do—but you are *building business for the future*. Once acquainted with thermostatic control, these owners of hand-fired plants will be eager to enjoy the full benefits of completely automatic heating. So order Draftender Control Sets from your local wholesaler today. For further information, write *Penn Electric Switch Co., Gosben, Ind., Export Division: 13 E. 40th Street, New York 16, U. S. A. In Canada: Powerlite Devices, Ltd., Toronto, Ont.*

PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

Will you get your share of **KRESKY** DEALER PROFITS?



OIL heat should make greater strides than ever after the war and EXTRA sales mean extra profits. That's why dealers everywhere are looking into the KRESKY line now . . . making plans to round out their own line with KRESKY equipment.

First of all there's the KRESKY Floor Furnace, the *original* and still the only forced air oil-fired floor furnace bearing the Underwriters label. Then there's KRESKY range burners, presenting a huge opportunity for a conversion volume in some localities. Other items include the KRESKY forced air furnaces, water heaters and space heaters. All equipped with the patented KRESKY oil burner producing clean, economical, trouble-free heat.

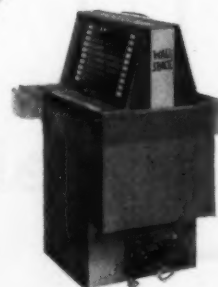
Look into KRESKY now. Write for full particulars on the attractive KRESKY Dealer Merchandising Plan.



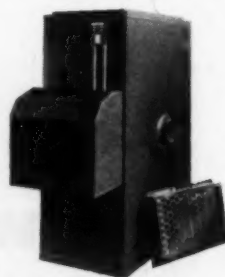
Listed by
Underwriters' Laboratories, Inc.
To Burn No. 3 Oil
(Diesel) or lighter

KRESKY MANUFACTURING CO.

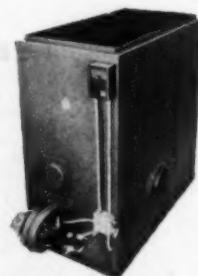
Pioneers in Oil Burning Equipment Since 1910
PETALUMA CALIFORNIA



FLOOR FURNACES



UTILITY HI-BOY



FORCED AIR FURNACES



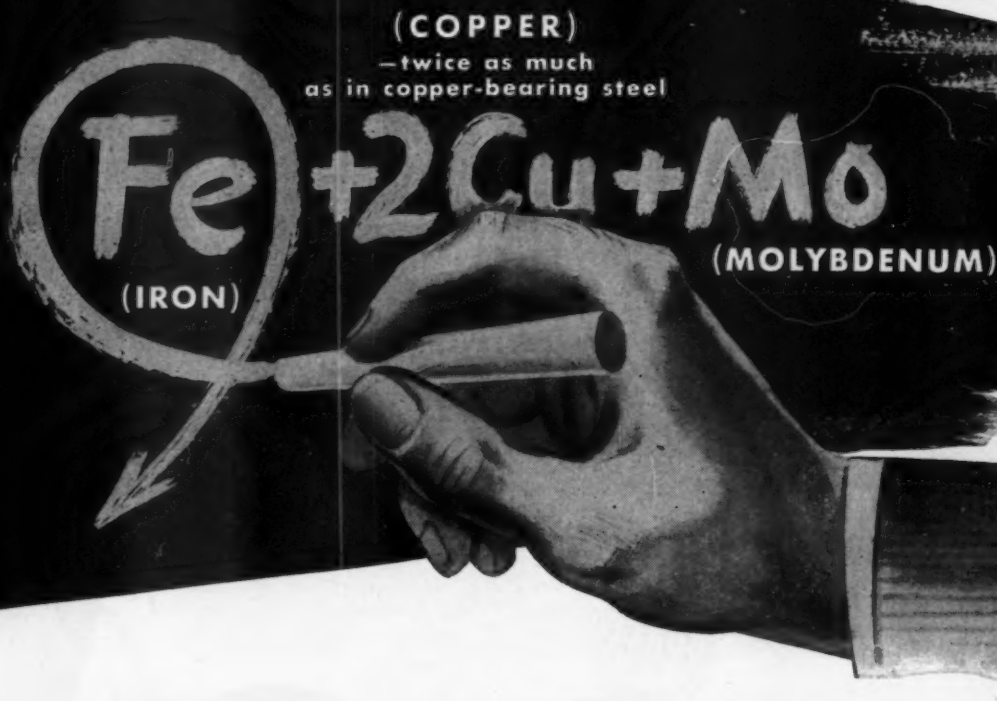
WATER HEATERS



FOR CONVERTING
WOOD AND COAL
RANGES

WORLD-WIDE ACCEPTANCE WON BY PERFORMANCE

FORMULA FOR LONGER SHEET METAL LIFE



One Reason Why Toncan Iron Is Easy to Work

... It is One of the Most Ductile of Materials

Besides having the highest rust-resistance of all ferrous materials in its price class, Toncan Iron has been famous for more than 35 years as one of the easiest materials to work. And one reason is the Iron from which it is made.

Irons are conceded to be "softer" metals. And Toncan Iron is made from highly refined open-hearth iron. In addition, it is specially processed for ductility.

Toncan Iron fabricates easily by

any method. You can cut it or punch it without chipping or flaking. It will take the difficult bends and deep draws without cracking. Strong welds are quickly made. And being free from hard spots, Toncan Iron works *uniformly*. This means fast, low-cost fabrication, better workmanship, less spoilage.

Toncan Iron has high rust-resistance because—it is a commercially pure iron—it has *twice as much copper* as copper-bearing steel—

it contains *molybdenum* to make the copper more effective. Only Toncan Iron has *all three* for rust-resistance.

So, when you're looking for a sheet metal to fight rust, don't pass up the high rust-resistance and fabricating economies of Toncan Iron. It can save money for your customers and make money for you.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Bldg., New York 17, N. Y.

If you want the profitable details about Toncan Iron, write for Booklet No. 410, "How Toncan Iron Makes Money for Sheet Metal Contractors and Fabricators."

Republic

TONCAN COPPER **IRON**
MOLYBDENUM

Reg. U. S. Pat. Off.

for walls, gutters, conductive pipes, roofing, siding, tanks, ventilators, skylights, sheds, and other sheet metal applications requiring rust-resistance.

5 shapes make 60 floats!

Home of CONCO-HEAT CONCO heat

"A FRANCHISE WORTH CROWING ABOUT"

Seldom does a new product create the interest and receive the immediate acceptance that was given the new Conco domestic unit. It is indicative of how well Conco anticipated the post war needs for automatic heat. Conco's advanced engineering and styling, the result of three years of unbroken war time research, is reflected throughout its entire line of heating equipment. Sold exclusively through large distributors with a proven background of experience and dependability, Conco is truly "A Franchise worth crowing about". A few territories are still open. Write today for full information about Conco heating equipment for coal, oil and gas.

CONCO heat

IT'S THE NEW CONCO DOMESTIC STOKER

BUILDERS OF A COMPLETE HEATING LINE

- SOLENT STOKERS
- STEEL HEATERS
- COMMERCIAL STOKERS
- OIL-FIRE AIR-CONDITIONERS
- GAS-FIRE AIR-CONDITIONERS

CONCO ENGINEERING WORKS • MENDOTA, ILLINOIS

"That Really Is ... A FRANCHISE WORTH CROWING ABOUT!"

Each week, scores of dealers and distributors write, asking about a CONCO STOKER franchise. Our answer is this: The new CONCO STOKER will be sold *exclusively* through large distributors with a proven background of *experience* and *dependability*. So far, distributor appointments have been *limited* by the volume of production

attained under today's conditions. *Additional appointments* will be made as *additional material* for production becomes available. A number of *choice territories* are still *open*. If yours is a *large, aggressive* distributor organization, write, and let us give you the facts on the Conco Heating Equipment line — coal, oil and gas.

CONCO ENGINEERING WORKS
MENDOTA, ILLINOIS

LET'S LOOK AT THE POSTWAR FURNACE MARKET



*Furnaces needed
for new homes — 1,400,000*

*Furnaces needed
for replacement 3,000,000*

*Total Furnaces needed for
1st 5 Postwar Years 4,400,000*

FIGURED conservatively that's the size of the immense market for warm air heating equipment for the first five years after the war—4,400,000 furnaces or an average of 880,000 furnaces per year. Here's the way these amazing figures were determined:

Out of 900,000 dwelling units per year, which is the average expert estimate on postwar residential construction 400,000 will be single-family centrally heated homes. Using the same proportion as in the five pre-war years 70 percent of these, or 280,000 new homes, will be equipped with warm air heating.

Now for replacement figures: Assuming the average life of a furnace to be 20 years, then the furnaces sold 20 years ago should be replaced now. In the five years, 1920 to 1924, 1,710,000 furnaces were sold. In 1940 to 1944, 1,615,000 furnaces were sold. Of the latter we can assume conservatively that 615,000 were for new homes, and 1,000,000 for replacement. This leaves a replacement back

log of 710,000 furnaces which has been built up during the war years.

Next we consider 2,285,000 furnaces sold in the five year period 1925 to 1929, twenty years ago, which should be replaced in 1945 to 1949. Adding this figure to the 710,000 deficiency we have in round numbers 3,000,000 furnaces to replace in the next five years, or an average of 600,000 furnaces per year. Adding this to the figure of 280,000 for new homes we have a market of 880,000 furnaces per year or a total of 4,400,000 furnaces for the first five postwar years.

To help you get your full share of this large potential warm air heating market RYBOLT engineers are planning and working ahead on new developments that will greatly advance heating efficiency and economy. As we said before, the RYBOLT postwar line will be the best that sound engineering and modern manufacturing methods can produce. It will give you all you need to build and hold postwar heating business.

**BUY MORE
WAR BONDS!**



THE RYBOLT HEATER COMPANY

615 MILLER STREET



ASHLAND, OHIO

5 shapes make 60 floats!

Home of CONCO-HEAT CONCO heat

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CONCO heat

FIELD & ASSOCIATES
1000 N. W. 10th St.
Mendota, Ill.

BUILDERS OF A COMPLETE HEATING LINE

- DOMESTIC STOKERS
- COMMERCIAL STOKERS
- STEEL INSERTS
- OIL-FIRE AIRCONDITIONERS
- GAS-FIRE AIRCONDITIONERS
- AIRMOATS, RADIATORS

3 1/2 MIN. CONCO DOMESTIC STOKER

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MENDOTA, ILLINOIS

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**BUY MORE
WAR BONDS!**



THE RYBOLT HEATER COMPANY

615 MILLER STREET



ASHLAND, OHIO

5 shapes
make 60
floats!

... designs are the
... the left. Throu-
... different ways.
... the shapes are
... there are
... made with these

... round half or
... the bottom. If
... the passing
... it to ac-

... even any of
... appear, or
... at once the
... know your

Home of
CONCO-HEAT
CONCO
heat

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CONCO
heat

FIELD & ENGINEERING
EQUIPMENT
IN STOKERS
AND CONCO

BUILDERS OF A COMPLETE HEATING LINE

- DOMESTIC STOKERS
- COMMERCIAL STOKERS
- OIL-FIRED APPLIANCES
- GAS-FIRED APPLIANCES
- STEEL FRUITS
- OIL-FIRED APPLIANCES
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**BUY MORE
WAR BONDS!**



THE RYBOLT HEATER COMPANY

615 MILLER STREET



ASHLAND, OHIO



Make a Good Product ^{SELL} Better With WHITE-RODGERS Automatic Temperature Controls

Make it right — then make it automatic. Compact, efficient, accurate White-Rodgers Hydraulic-Action temperature controls give your product the "extra" that means the big difference in selling. Predominantly used in heating, refrigeration and air-conditioning. Readily adaptable on any application requiring accurate control of temperature. Add this selling-working force to your warm-air heating installations. Write today for catalog and installation data.

Here's How
It Works:



CONTRACTED

At left is a cross-section of the diaphragm and part of the liquid-filled capillary. The liquid has contracted, the diaphragm moving inward, causing the switch to function.



EXPANDED

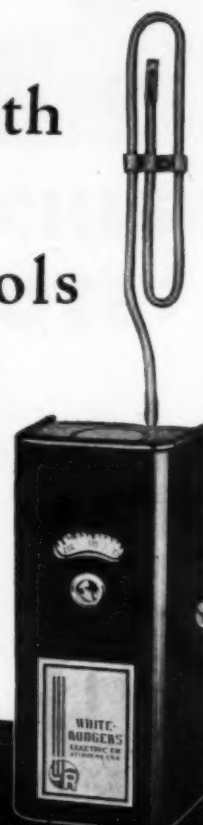
In view at left, the liquid charge of the capillary has expanded with a rise in temperature. This positive force moves the diaphragm outward and causes the switch to function.

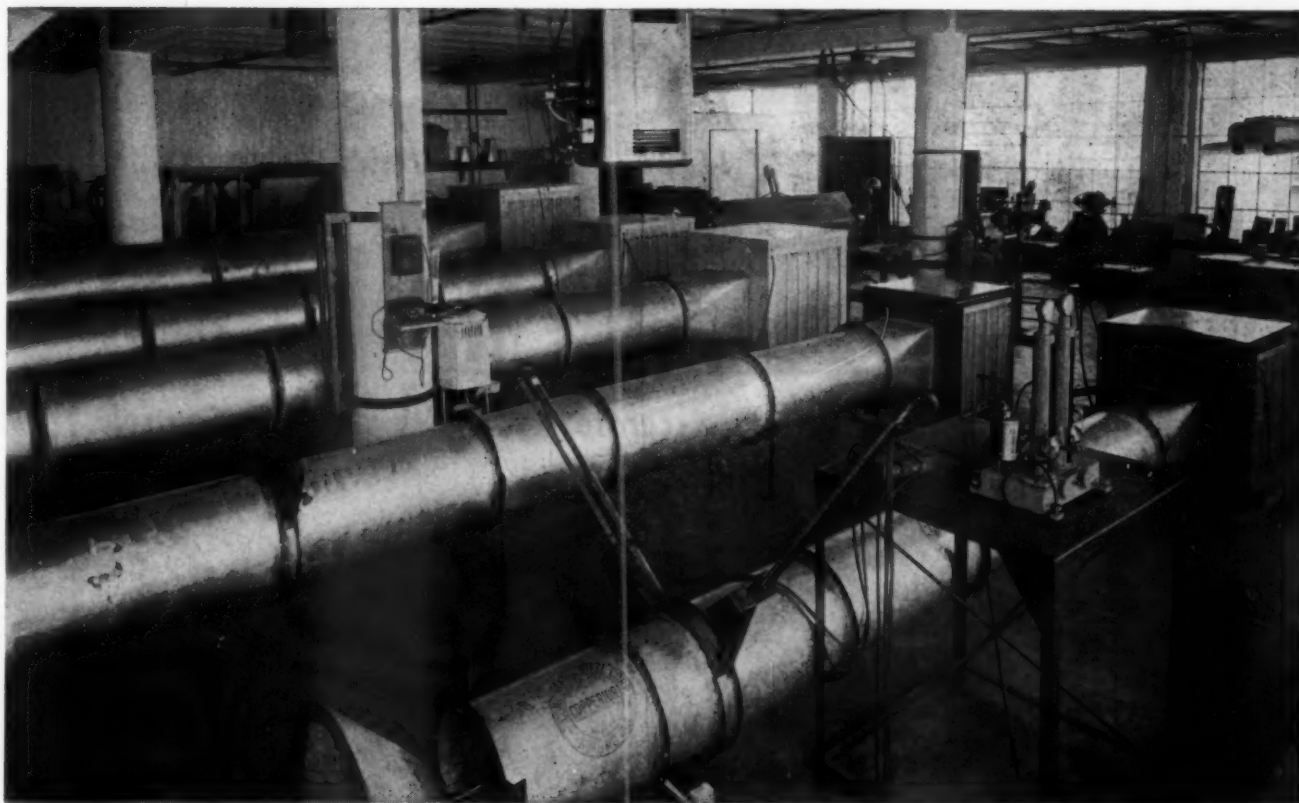


WHITE-RODGERS ELECTRIC CO.

ST. LOUIS 6, MISSOURI

Controls for Refrigeration • Heating • Air Conditioning





UTILITY AIR COOLERS

*are scientifically tested
in our modern laboratory*

Utility Air Coolers, Fans and Blowers are tested for accuracy and efficiency in this most modern and complete laboratory, in accordance with American Society of Heating and Ventilating Engineers' standard test code.

These extensive testing and fact finding facilities, under the supervision of competent and recognized engineers, are your assurance of properly engineered and efficient products, coming from Utility Appliance Corp.



UTILITY APPLIANCE CORP.

Formerly Utility Fan Corporation

4851 S. Alameda St., Los Angeles 11, California



PROPELLER
FANS



BLOWERS



FORCED AIR
FURNACES

Manufacturers of Evaporative
Air Coolers, Blowers, Fans,
Forced Air Furnaces, Circu-
lating Heaters, Unit Heaters
and Floor Furnaces.



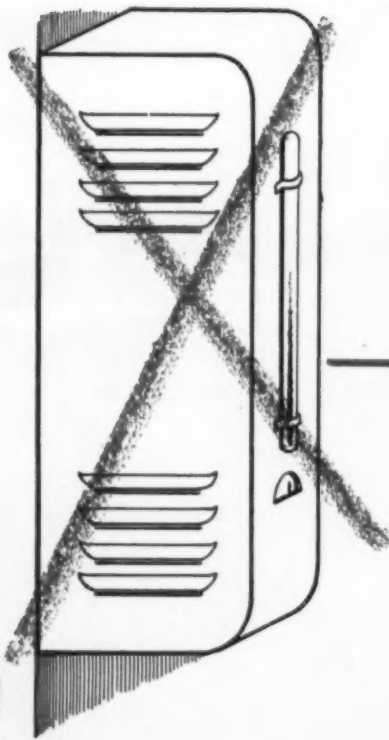
EVAPORATIVE
AIR COOLERS



SPACE
HEATERS



FLOOR
FURNACES



Functional beauty....

TRIMTHERM

Accurate Room Temperature Control

GENERAL CONTROLS' T-80 Series Trimtherm has set a new standard of accuracy in remote control of room temperatures. Its remarkable sensitivity insures a differential of only $\frac{1}{2}^{\circ}\text{F}$. Its dull chrome cover, streamlined design and flush mounting harmonize with any scheme of room decoration. The Trimtherm is truly an example of functional beauty.

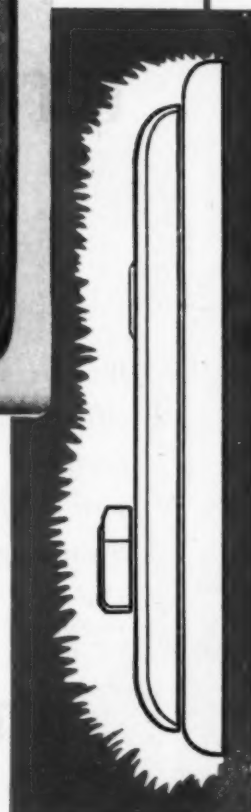
Compare the conventional type thermostat above, where air has to pass through louvers in the housing to reach the sensitive element, with the compact Trimtherm at right, which typifies the ultimate in modern engineering design. A thermostat that lives thermally in the room.

T-80 Series Trimtherm available only in B-60 All-Gas-Control Package Sets. Sets include a B-60 Series Gas Control Valve, Thermocouple Pilot Generator (no outside current required), 30 feet of thermostatic wire and a T-80 Series Trimtherm.

FOR COMPLETE SPECIFICATIONS on temperature, pressure and flow controls for commercial and domestic applications in the Gas Industry, write for Catalog 52-B and Service Manual F1-101, or contact your nearest Factory Branch or Distributor.



Harmonizing dull chrome cover is thermally responsive mechanism, unboused and exposed to immediate radiant heat and temperature change. Extends only $\frac{7}{8}$ " from wall. Ivory plastic base acts as blanket to thermally isolate instrument from wall.




GENERAL
501 ALLEN AVENUE



CONTROLS
GLENDALE 1, CALIF.

FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON • CHICAGO • DALLAS
KANSAS CITY • NEW YORK • DENVER • DETROIT • CLEVELAND • PITTSBURGH
HOUSTON • SEATTLE • SAN FRANCISCO • DISTRIBUTORS IN PRINCIPAL CITIES

IT'S BIG NEWS!



BECAUSE: Here's a bituminous coal stoker that removes its own ash—stops complaints about hot and smelling clinkers—ashes are actually removed to a sealed container, this feature alone is revolutionizing stoker engineering.

BECAUSE: Coal is fed from present coal bin to furnace without necessity of making alteration, building special hoppers or turning furnace. No longer need objections to back-breaking coal shoveling ruin your stoker sales because coal can easily be fed any distance, and from any angle.

BECAUSE: Here is a stoker that burns low cost slack coal as well as regular stoker-sized coal—a mighty big advantage for coal dealer and customer alike.

BECAUSE: With the Pocahontas Stoker line your selling range is complete from automatic ash removal stokers, to bin-feed clinker type and commercial hopper types—tremendous possibility is offered to aggressive dealers.

BECAUSE: All Pocahontas Stokers are distributed through franchised dealers whose territory is protected. Many dealers have held these franchises since Pocahontas Stokers were first put on the market over ten years ago. We suggest that you write us today to see if your territory is available.

Stoker Division

POCAHONTAS FUEL COMPANY INCORPORATED
340 East 131st Street
Cleveland 8, Ohio

POCAHONTAS

THE FIRST SUCCESSFUL BITUMINOUS
BIN-FEED, ASH REMOVAL STOKER

MR. DEALER...

Here's How To Stop Basement "Burglars"

WHO'VE BEEN GIVING YOUR CUSTOMERS THE "SHIVERS"

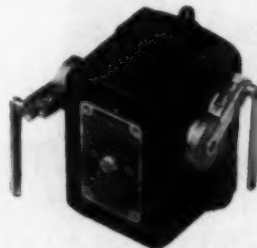


Hit-or-miss firing and regulating of hand-fired furnaces is one of the boldest "burglars" that ever sneaked through a basement window! . . . Stealing FUEL value that should be heating your customers' homes comfortably and economically instead of going up the chimney flue . . . Causing temperature irregularities that bring illnesses and colds.

Arrest this common cause of so much home heating trouble for your coal-burning customers, by installing the



AUTOMATIC HEAT REGULATOR SETS—and perform a timely service that will build lasting good-will! For this "A-P" Automatic Heat Regulator Set is a great fuel saver — positively preventing "take-a-chance" furnace-firing waste.



See how easily THIS FUEL-WASTE ARRESTER IS INSTALLED . . .



Attach "A-P" Thermostat to inside wall, 4 feet above floor. It "floats" the fire, and convenient, easy-to-read setting controls room temperature within 1". Actuates damper control. Easy to install. Ivory-tone cover contains accurate thermometer.



Now place an "A-P" Limit Control on the furnace bonnet, preventing furnace heat from overshooting room thermostat setting. Keep Limit Control adjusted to outside weather for satisfactory sentineling of fire.



Finally install the "A-P" Damp-er Regulator, and connect to Room Thermostat and Limit Control. Unit is treated to avoid rusting from summer basement dampness.

DELIVERIES of "A-P" Automatic Heat Regulator Sets, with or without Limit Control, are now in full swing. Be sure to stock enough to take care of all your customers' immediate requirements.

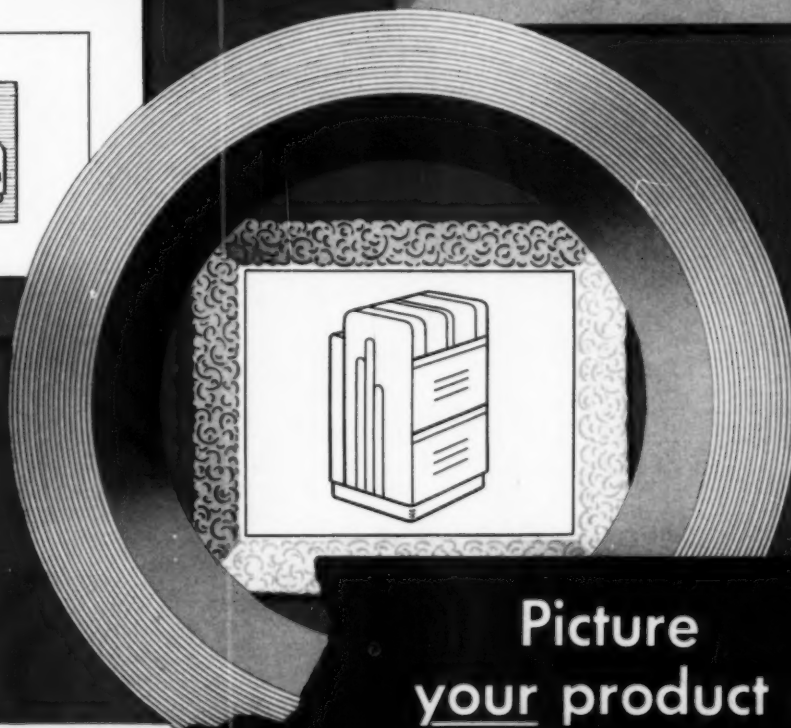
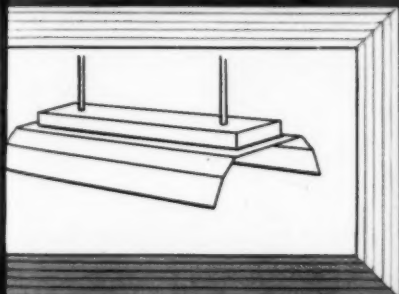
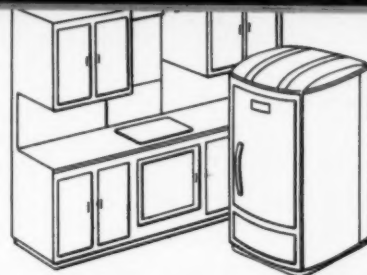
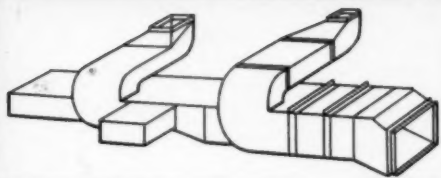
AUTOMATIC PRODUCTS COMPANY
2470 N. 32nd STREET MILWAUKEE 10, WISCONSIN



DEPENDABLE
Controls

FOR HEATING • AIR CONDITIONING • REFRIGERATION

AMERICAN ARTISAN, December, 1945



Picture
your product in

Weirzin

ELECTROLYTIC ZINC COATED SHEETS AND STRIP

Have you considered the *net* results of using Weirzin to build *your* product? Here is how one manufacturer profited. (1) He eliminated inventory loss due to rust. (2) He cut pickling, cleaning and buffing operations. (3) Because of the absolute uniformity of Weirzin and its availability in *coils* he speeded and smoothed his production. (4) Because of the high ductility of the Weirzin steel base sheet and

the tightness and malleability of the coating, *deep drawing* was accomplished *easier* and with a complete absence of peeling, flaking or powdering. (5) The surface of Weirzin had a better "tooth" for decorative finishes and his finished product had a much greater resistance to high temperatures, high humidity and *rust* . . . It may pay *you* to check on Weirzin. Write for technical booklet—today.



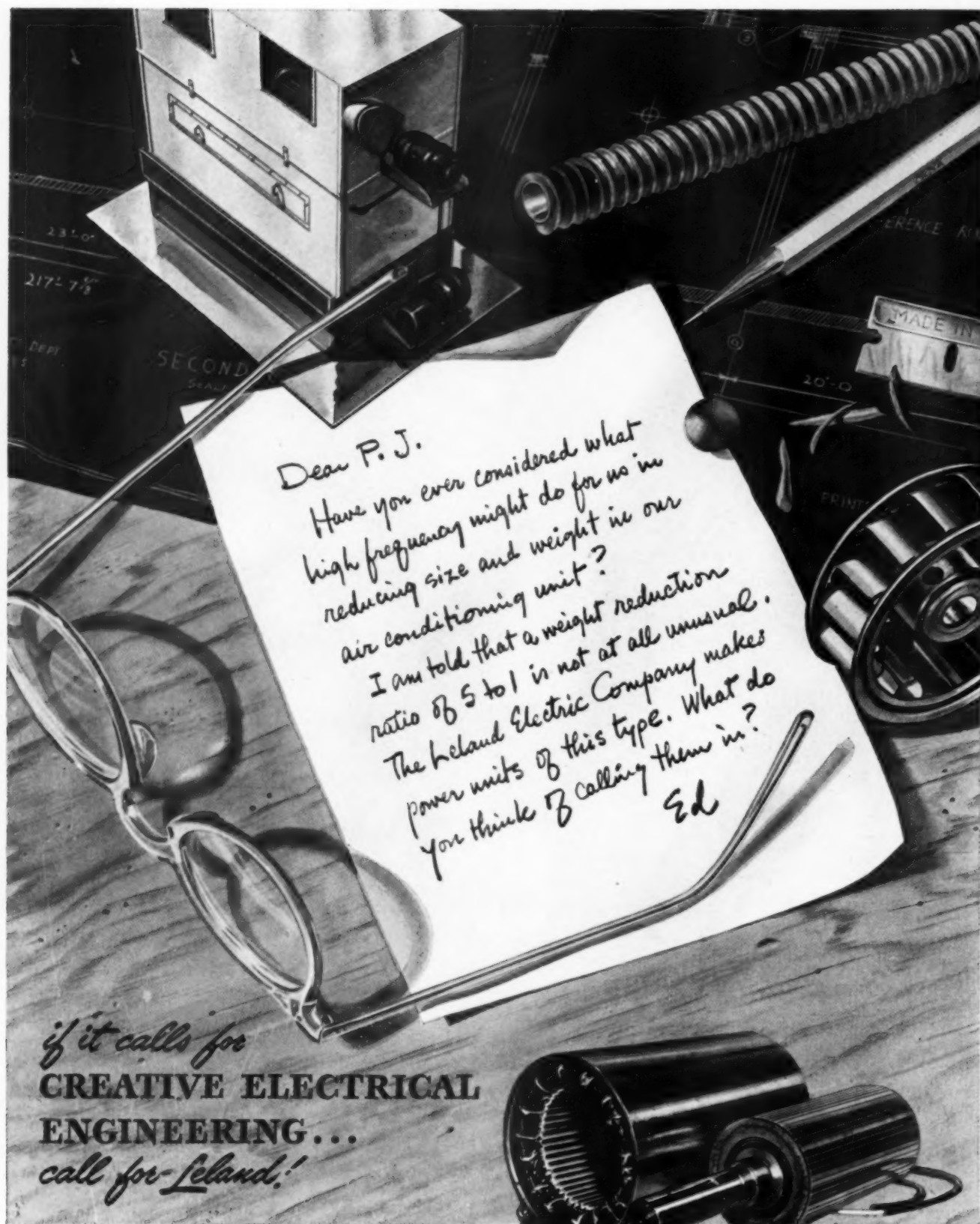
WEIRTON



STEEL CO.

WEIRTON, W. VA. Sales Offices in Principal Cities

Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.



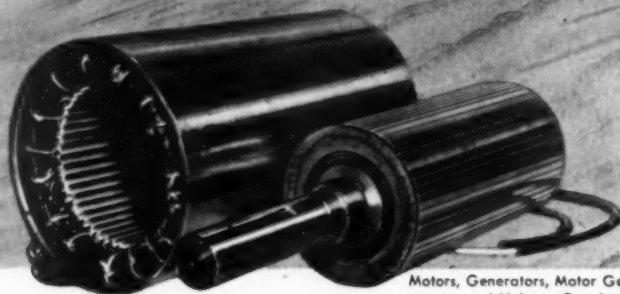
Dear P. J.

Have you ever considered what
high frequency might do for us in
reducing size and weight in our
air conditioning unit?

I am told that a weight reduction
ratio of 5 to 1 is not at all unusual.
The Leland Electric Company makes
power units of this type. What do
you think of calling them in?

Ed

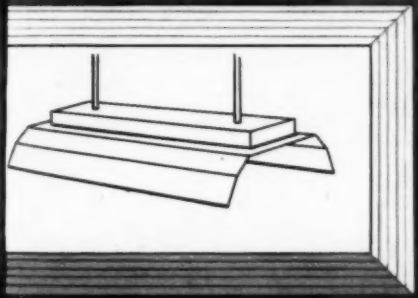
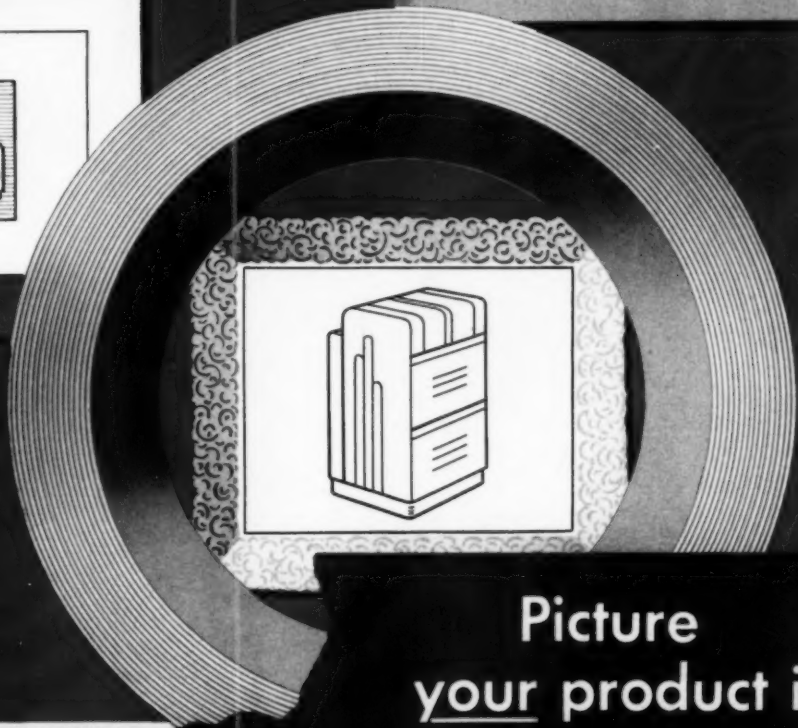
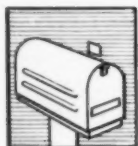
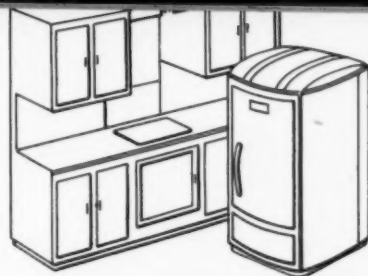
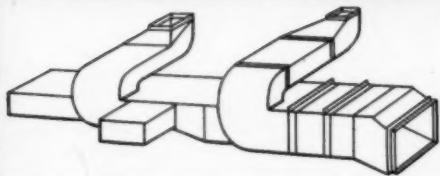
if it calls for
**CREATIVE ELECTRICAL
ENGINEERING...**
call for Leland!



Motors, Generators, Motor Gen-
erators and Voltage Regulators

THE Leland ELECTRIC COMPANY

Dayton, Ohio • In Canada, Leland Electric Canada, Ltd. • Guelph, Ontario



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your product in

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Ed

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call for Leland!

Motors, Generators, Motor Generators and Voltage Regulators

THE Leland ELECTRIC COMPANY

Dayton, Ohio • In Canada, Leland Electric Canada, Ltd... Guelph, Ontario

CRESCENT

...The Wrench known the World over

Long before the war, Crescent Wrenches—and other Crescent Tools—were known the world over as Quality Tools. You could find them in Peiping or Pernambuco, Dorado or Denver—helping skilled hands to do better work, faster.

Despite its worldwide use, despite attempted plagiarism, there is *Only One* Crescent Wrench—the product of the Crescent Tool Company for almost Forty years. The best steel, the best design and the best workmanship have marked these wrenches as “Best Sellers” everywhere. Once again, Crescent Tools are being produced in their normal peacetime finish—lustrous and highly protective chrome. Soon an ample supply will be available through Crescent dealers.

CRESCENT TOOL COMPANY
Jamestown, New York



"BEST SELLERS"

FOR 40 YEARS

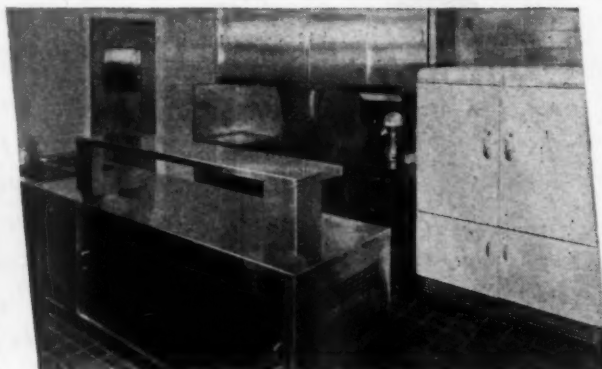
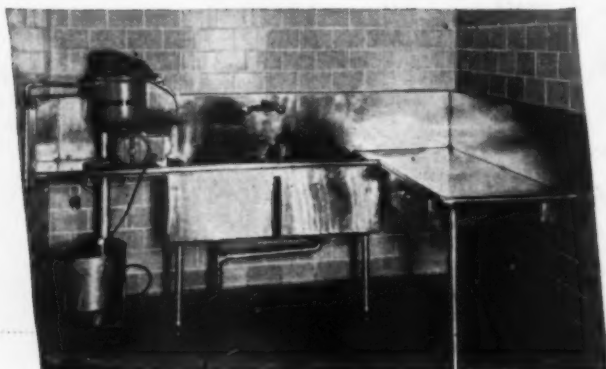


CRESCENT TOOLS

Give Wings to Work



No other metal... is more sanitary, durable,
easy to clean!



Any sheet metal fabricator would be proud of this stainless steel equipment—now saving time, trouble and money for a big Cleveland hospital.

Now that this bright rustless metal again has become plentiful, you too can make good profits, and give your customers lasting satisfaction, with ARMCO Stainless Steel construction.

You can tell prospects that no other metal is more sanitary, durable and easy to keep clean. Wash-ups require less time because dirt and grease don't take to

its dense, smooth surface. Upkeep is no problem because there is no wear-out or rust-out to stainless.

You can readily shear, work, weld and solder ARMCO Stainless Steel. And it gives you a lot of pride and satisfaction when you see your jobs ready for long years of faithful, low-cost service.

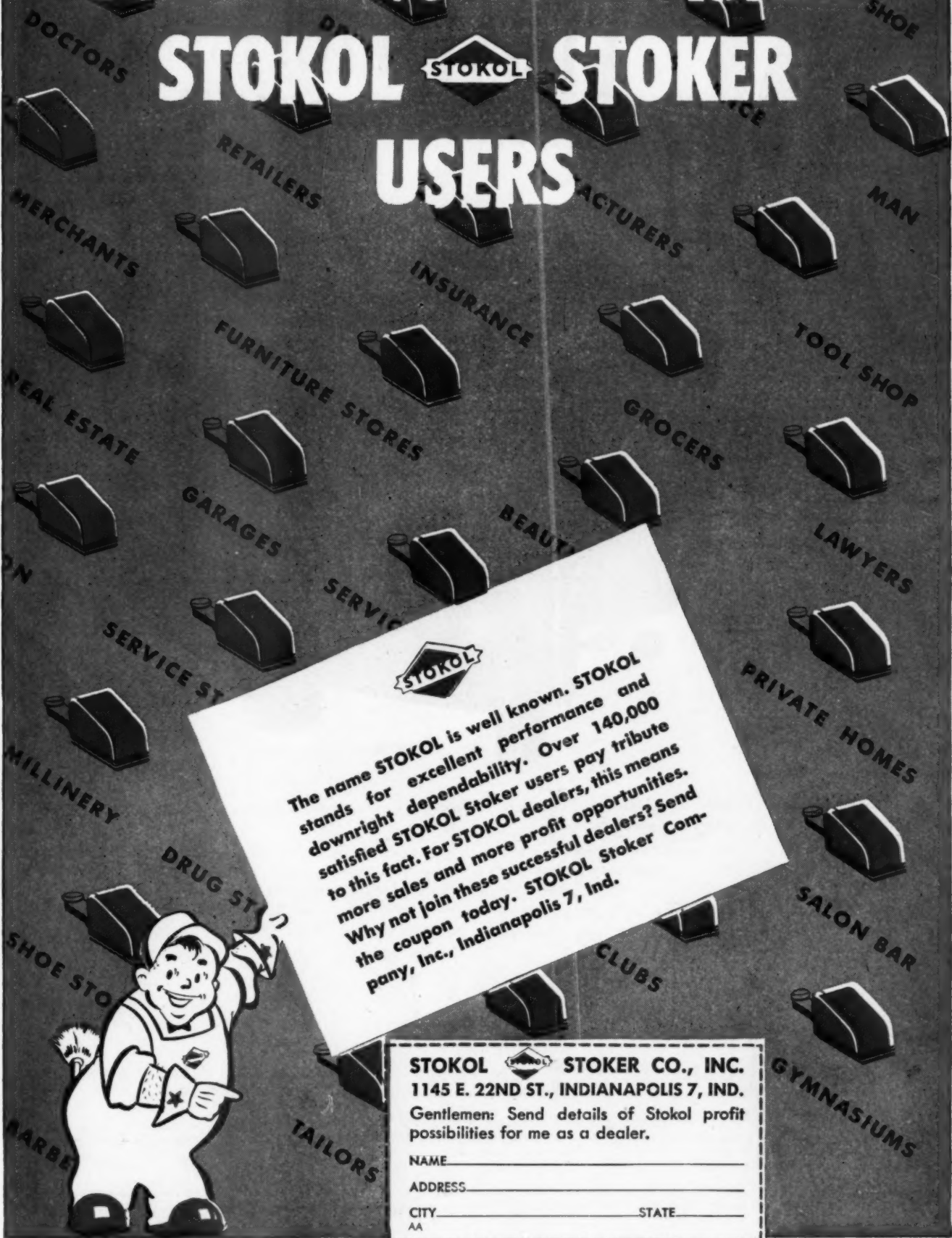
Get in touch with the ARMCO Stainless Distributor and he'll tell you about types, applications, prices and deliveries. The American Rolling Mill Company, 2841 Curtis Street, Middletown, Ohio.




YOU CAN USE THIS New Armco booklet to advantage in promoting profitable jobs. "Know Your Steel When You Build or Remodel" tells people in simple understandable words what grades of Armco sheet steel should be used for all equipment and construction needs. It will save your time and energy and do a good selling job for you. Order copies only for the customers and prospects you know will build or remodel. Do it today.



OVER 140,000 SATISFIED STOKOL STOKER USERS



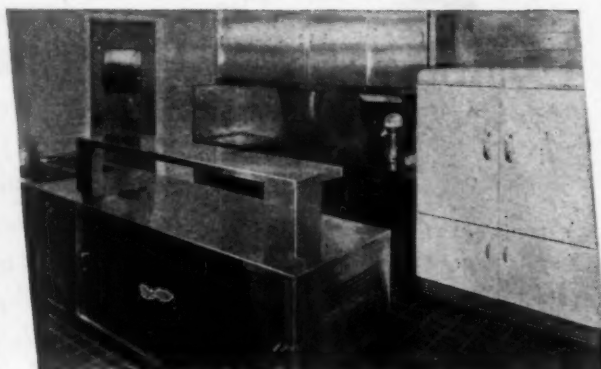
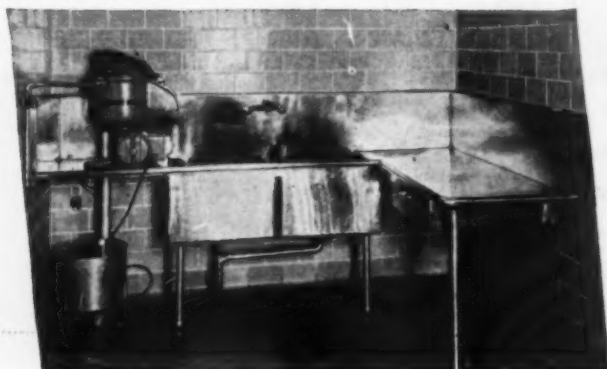
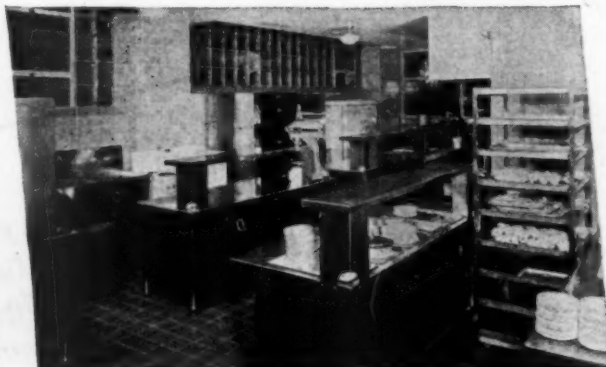

The name STOKOL is well known. STOKOL stands for excellent performance and downright dependability. Over 140,000 satisfied STOKOL Stoker users pay tribute to this fact. For STOKOL dealers, this means more sales and more profit opportunities. Why not join these successful dealers? Send the coupon today. STOKOL Stoker Company, Inc., Indianapolis 7, Ind.



STOKOL  STOKER CO., INC.
1145 E. 22ND ST., INDIANAPOLIS 7, IND.
Gentlemen: Send details of Stokol profit possibilities for me as a dealer.

NAME
ADDRESS
CITY STATE
AA

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Get in touch with the ARMCO Stainless Distributor and he'll tell you about types, applications, prices and deliveries. The American Rolling Mill Company, 2841 Curtis Street, Middletown, Ohio.




YOU CAN USE THIS New Armco booklet to advantage in promoting profitable jobs. "Know Your Steel When You Build or Remodel" tells people in simple understandable words what grades of Armco sheet steel should be used for all equipment and construction needs. It will save your time and energy and do a good selling job for you. Order copies only for the customers and prospects you know will build or remodel. Do it today.



OVER 140,000 SATISFIED STOKOL STOKER USERS

DOCTORS
RETAILERS
MERCHANTS
REAL ESTATE
GARAGES
SERVICE ST
MILLINERY
SHOE STO
BARBER
TAILORS
TOY
DRUG ST
SHOE
LAP
SHOE
MAN
FACTURERS
INSURANCE
TOOL SHOP
GROCERS
BEAUTY
LAWYERS
PRIVATE HOMES
SALON BAR
GYMNASIUMS
CLUBS




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NAME _____
ADDRESS _____
CITY _____ STATE _____
AA

Mr. Dealer

"DL" FLOAT VALVES

HELP BROADEN YOUR HEATER MARKET



Space heaters and furnaces equipped with "DL" Float Valves substantially broaden your heating market.—

Because there are so many places where these heaters and furnaces can be sold, either as replacement units or for new construction.

Hundreds of thousands of small homes building or built, stores, garages, gasoline stations, offices, small churches, need modern heat.

Ranges and water heaters often may be sold at the same time.

"DL" Float Valves provide one of the important essentials to a good heater—years of satisfactory, trouble free comfort. They're simple, easy to service on the rare occasions when they need it. They compensate automatically for fuel viscosity variation due to temperature change.

They're good valves—good products have them.

DETROIT LUBRICATOR COMPANY General Offices: 5900 TRUMBULL AVENUE
DETROIT 8, MICHIGAN

Division of **AMERICAN RADIATOR & Standard Sanitary CORPORATION**
Canadian Representatives — RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG



"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

Thank you, G.W. Anderson

★ In Coal Heat for August, 1945, Mr. G. W. Anderson, Service Engineer for Koppers Coal Division, Eastern Gas and Fuel Associates, Detroit, Mich., wrote on "Stokers—From The User's Point of View." Among other things, he has this to say:

"There are certain points of stoker design that should be considered carefully . . . One of the most important of these, and too frequently the least considered, is the retort, the heart of the stoker. The design, the shape of the retort tuyeres has a decided bearing on the coals that can be successfully used in the stoker. A retort which is deep, and which has straight, or nearly vertical, sides, will be definitely limited to free-burning, non-caking coals, whereas a retort whose diameter increases from the throat to the top will burn a greater variety of coals, and be trouble-free over a wide variety of adjustments.

"A well designed retort will permit an intimate mixture of coal and air, will keep the burning zone well up in the retort, will allow for the expansion of coal as it is coked, and will be heavy enough to dissipate heat during periods when the stoker is not operating. All these are accomplished if the retort has sufficient flare, if the ports are kept near the top, and if they are sized to admit the correct volume under sufficient pressure. The 'turn', or heel of the retort where the coal travel is changed from horizontal to vertical should be such that the coal is not directed with pressure against the air ports . . ."

... your outline of an ideal stoker retort is practically a description of Consolidated's!

Check! Our own description of the Consolidated retort in previous advertisements, reads: "Consolidated's burning principle extracts every heat unit from coal. This new, super-charged burner is the heart of the Consolidated stoker. A sharp departure from the beaten path, it utilizes low type tuyeres whose higher efficiency was discovered in the designing of stokers for marine boilers. These tuyeres give an unusually large top surface air delivery, prevent clogging, and reduce coke-tree formation to a minimum. They contain chrome and nickel for long life, are air cooled."

Just look at the tapered retort throat, the wide top, the low tuyeres with ports as near the top as they can possibly be. These vents are angled just enough to deliver the air to the burning bed, not waste it below the fire.

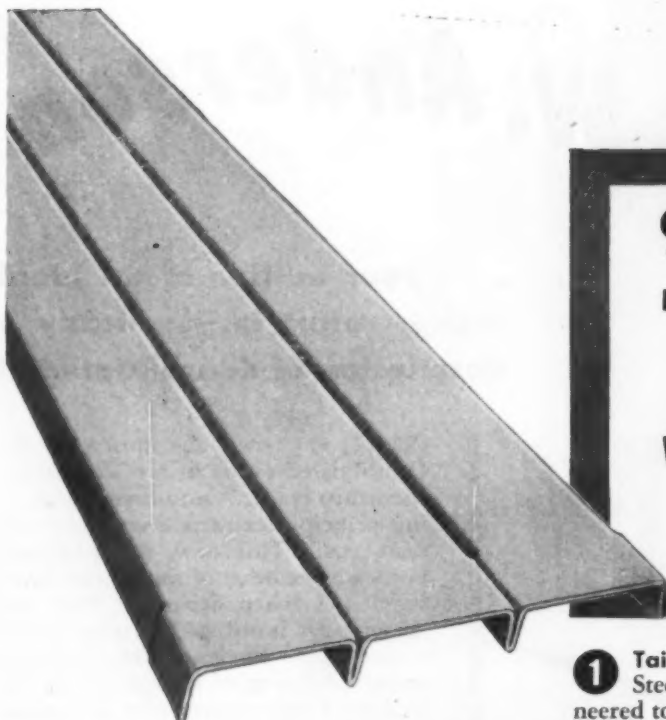
The tapered retort throat does this exactly — keeps coal from piling unevenly, leaves it loose-lying, avoids jamming against air ports.

The popularity of Consolidated features is winning new dealers to the new leader in stokers. Consolidated has led stoker sales in America for Class B (domestic minimum) stokers for several months. Stoker dealers in all sections of the country are asking about Consolidated's franchise as soon as they see this new star among stokers. If you are interested in growing with this new leader, let us hear from you.



CONSOLIDATED
Stoker

CONSOLIDATED INDUSTRIES, INC. LAFAYETTE, INDIANA



Milcor Steel Roof Deck is laid end to end and clips are inserted as the deck is laid. The nesting feature assures a sufficiently-lapped, close fit.



A water-tight, insulated roof is easily applied with asphalt directly over the deck.

Roofing contractor for the job illustrated was the Warren-Ehret Co., Baltimore. Sheet metal sub-contractor was The Fingles Co., Baltimore.

9 reasons why you get more of the profitable roof deck jobs with **MILCOR** Steel Roof Deck

- ① **Tailored to the job.** Milcor Steel Roof Deck is engineered to fit the specific job. All special conditions applying to installation are given attention when plans are submitted.
- ② **Easily erected.** Milcor Steel Roof Deck is quickly attached — clipped or welded — to any structural member. Clips are designed for speedy placement. Erected anytime — no waiting for the weather.
- ③ **Rigidity with light weight.** Although sturdily fabricated, Milcor Steel Roof Deck does not have excessive weight. One man can easily handle a three-rib unit. This also makes possible a lighter supporting structure, because there is less load to carry.
- ④ **Attractive appearance.** An unbroken, uniform roof surface is obtained with Milcor Steel Roof Deck, in keeping with the design of modern fireproof buildings.
- ⑤ **Exterior operation.** Milcor Steel Roof Deck is installed directly over super-structure. Your men do not need scaffolding which would have to be torn down upon completion of the job.
- ⑥ **No bumps or bulges.** Milcor Steel Roof Deck does not bulge or warp out of position as a result of expansion or contraction. It makes possible a permanently leak-proof roof. Replacement costs are reduced to a minimum.
- ⑦ **Rust resistant.** Milcor Steel Roof Deck is made of copper-alloy steel painted after fabrication, or tight-coat galvanized steel. Also fabricated from special steels, if desired.
- ⑧ **Adaptable.** Milcor Steel Roof Deck lends itself to either small or large-scale construction, with equal success.
- ⑨ **Fire-resistant.** Famous Milcor Steel Roof Deck and accessories are fire-proof. Whether fire is of interior or exterior origin, the steel deck is an effective fire barrier.

Install Milcor Steel Roof Deck, for greater assurance of finished jobs that give building owners all-around satisfaction.

G-96

MILCOR STEEL COMPANY

MILWAUKEE 4, WISCONSIN

Baltimore 24, Maryland • Chicago 9, Illinois • Kansas City 8, Missouri
Los Angeles 23, California • Rochester 9, New York

THE J. M. & L. A.

OSBORN CO.

... equipped to provide additional service through

CLEVELAND 14 • DETROIT 2 • BUFFALO 11 • CINCINNATI 25

... a Division of Milcor Steel Company

EXCLUSIVE FEATURES OF

Combustioneer

with **FIRE-BED**
that **"BREATHES"**

Assure Easier Sales
CONTINUOUSLY

If you want to handle a stoker with exclusive features which makes sales easier—not only now but in the competitive days ahead—your answer is Combustioneer, the advanced, modern stoker with Fire-Bed that "Breathes."

It is simple for prospects to understand how Combustioneer's "Pulsating" Transmission feeds coal by "impulses"—a stop-and-go action. This "impulse" feeding "agitates" the fire-bed, keeping it loose, free-burning, so that every particle of coal is always completely surrounded by air.

And they like the new, exclusive way Combustioneer's Automatic Respirator forces the correct amount of metered air around every particle of burning coal to produce complete combustion. They see in-

stantly how this "agitation and aeration" make a FIRE-BED that "BREATHES" and thus extracts at all times EXTRA heat-energy from every pound of coal.

This exclusive, convincing selling story enthuses dealers everywhere. They also report great satisfaction with Combustioneer's national advertising and the way the factory helps them by supplying a wide array of tested promotional and sales helps.

Choice dealerships are still open in some areas. Wire or write for complete details of Combustioneer's *profit-protected* Dealer Franchise. Act now while these dealerships are still available.

THE STEEL PRODUCTS ENGINEERING CO.
1242 W. Columbia St., Springfield, O.
*Designers, Engineers and Manufacturers
of Precision Products Equipment*

This Combustioneer Bin-Feed feeds coal direct from the bin to the fire-bed. The Combustioneer line of hopper-type and bin-feed models is complete for serving residences, apartments, public buildings, institutions, and industrial plants.

Cash in **THIS YEAR** with —

Combustioneer

AUTOMATIC COAL STOKER
FOR HOMES, APARTMENTS AND FACTORIES



**Introduce these
star business-
getters at your
next big sales
conference!**



Are you readying your plans for boosting your heating equipment sales in a booming market?

Then put punch in your selling program—give your salesmen the edge that comes from offering General Electric Automatic Heating Equipment: Winter Air Conditioners, Oil and Gas-fired and Conversion Oil Burners.

G-E units *help your salesmen sell*. The name G.E. puts your prospects in a buying mood. They *know*—from the boasts of their fortunate friends who own G-E furnaces—from consistent G-E advertising and promotion—that General Electric means the best in thrifty-comfort automatic heating.

Speculative builders have capitalized on that fact—to their profit. Their sales records show that home-buyers want G-E Automatic Heating Equipment—will pay extra to get it!

There's a sales tip for you—the equipment that can sell houses can certainly sell itself! So get ready now for your share of heating business—plan to push G-E Automatic Heating Equipment.

*General Electric Company, Air Conditioning Department,
Section 55312, Bloomfield, New Jersey.*

BUY... and hold... VICTORY BONDS

GENERAL  ELECTRIC
Automatic Heating Equipment

EVER WONDER WHY YOU NEVER SEE "SECOND HAND" LOCKFORMERS FOR SALE?



SORRY, NEVER DID HAVE ONE OF THOSE IN HERE!

THERE is no such thing as an obsolete Lockformer. The first ones built were "right" to start with. Auxiliary rolls and attachments fit the first models just as they do the 1945 models.

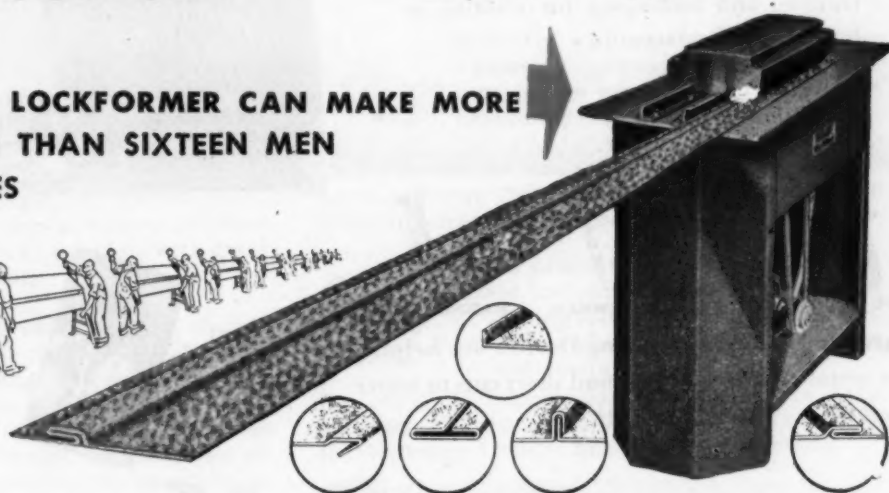
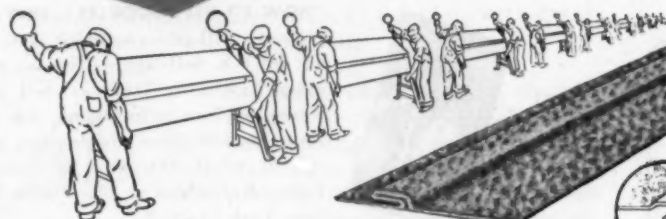
A Lockformer more than doubles the production capacity of any shop. The hours saved in fabrication as well as in erection mean substantial extra profit—enough in many instances, to more than pay for the Lockformer on a single job.

Lockformers keep on earning extra profits year after year. To the best of our knowledge, no Lockformer has ever worn out. Maintenance is negligible and so is the shop space required.

These are just a few of the reasons why Sheet Metal Men—once they have used a Lockformer—never part with it. We'll be glad to give you the full Lockformer story or, if you want some real enthusiasm, just talk to a man who has had a Lockformer for a year or more!

We know everybody is busy these days so this is just a quick "time-out" to say Merry Christmas and Happy New Year!

ONE MAN WITH A LOCKFORMER CAN MAKE MORE PITTSBURGH LOCKS THAN SIXTEEN MEN WITH EIGHT BRAKES



THE LOCKFORMER CO.

4615 ARTHINGTON STREET • CHICAGO 44, ILLINOIS

SHORT CUTS TO ASSEMBLY SAVINGS...

YOU KNOW THIS TIME-TESTED TIME-SAVER. When the P-K Type "A" Sheet Metal Screw was introduced over 30 years ago it was the answer to a tinsmith's prayer. There's nothing like it for ducts, fan housings, exhaust systems, — any assembly of light (up to 18 gauge) sheet metals. Made with slotted or Phillips head.



TYPE "A"



TYPE "Z"



NO TIME OUT FOR TAPPING. On heavier sheets (up to 6 gauge) where you might consider using machine screws or bolts, the P-K Type "Z" Self-tapping Screws will eliminate tapping and awkward nut-running, save up to 50% in assembly time and labor. Hold better than machine screws. Slotted or Phillips Heads.

A HEAD FOR HEAVY GOING. With P-K Hex Head Self-tapping Cap Screws, it's a cinch to make fastenings to heavy plates and structural shapes up to 1/2" thick. On many assemblies it will save you the time, trouble, and tooling-up for riveting in hard-to-reach places.



HEX HEAD



TYPE "F"



TYPE "U"



SCREWNAIL



MASONRY NAIL

ALL SEVEN of the P-K Fastening Devices are helping sheet metal men everywhere find short cuts to better assemblies... know them all!



"HOW TO USE" BOOKLET — FREE on request — will give you quick facts on all the P-K Self-tapping Screws and other Fastening Devices — tell you where and how to use them. Ask for form No. 480. Free samples, too, just tell us what you want to fasten. Parker-Kalon Corp., 208 Varick St., New York 14, N. Y.

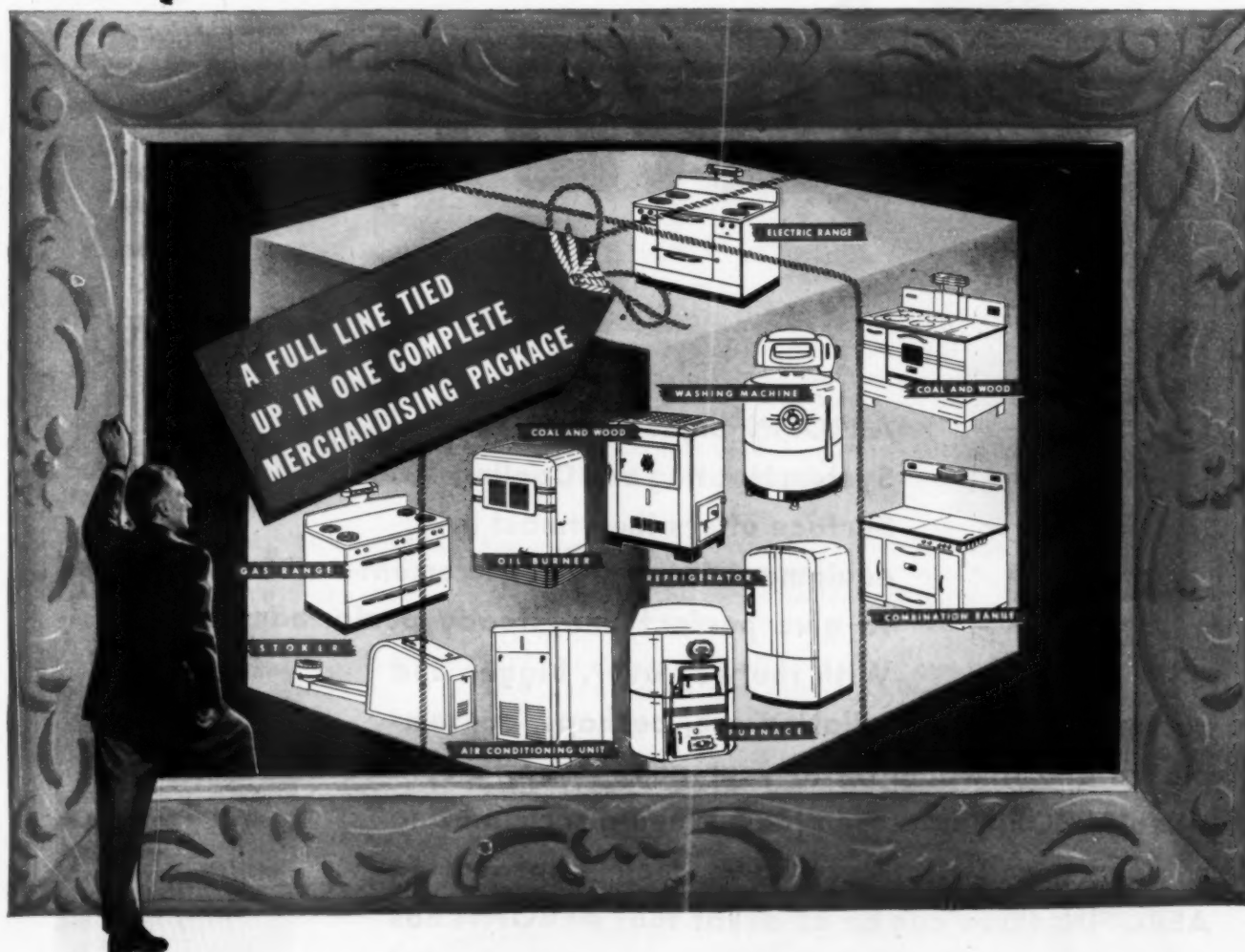
SELF-TAPPING SCREWS

P-K

**FOR EVERY METAL
AND PLASTIC ASSEMBLY**

FOR EVERY METAL AND PLASTIC ASSEMBLY

Step into the *PROFIT* Picture...



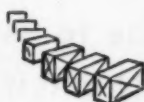
with the **KALAMAZOO POST WAR FRANCHISE**



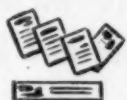
A complete line . . . paced by Kalamazoo Gas and Electric Range models that are genuinely new . . . offers franchise dealers, *for the first time*, a share in Kalamazoo Prosperity. For 45 years, Kalamazoo has sold only by mail and through factory-owned stores. Now, through mass production and mass distribution, Kalamazoo gives you a quality line with great profit and volume possibilities.



Business counsel . . . that is unique in the history of appliance selling is at your disposal. Kalamazoo—with 45 years of experience in retail appliance sales—knows how to stop “loss leaks” and keep you on the “profit side.” Our tremendous reservoir of compiled consumer sales information is yours. The comprehensive sales training program puts you ‘way out ahead of your competition. You are always a “partner” in our business.



Greater values through greater volume . . . gives you a head start your competition cannot meet. Kalamazoo has poured two-and-a-half million dollars into re-tooling and streamlining its production line . . . so that you can sell products that are *new*—not made-over 1942 models. Mass production will give you unparalleled values to offer.



Sales promotion support . . . will include national and local advertising . . . a complete, hard-hitting sales promotion program . . . expert assistance by engineering and sales staffs.

For complete information, write today to Sales Manager, Kalamazoo Stove and Furnace Company, 453 Rochester Avenue, Kalamazoo 6, Michigan.

KALAMAZOO

STOVES AND FURNACES

QUALITY LEADERS SINCE 1901

AEROFIN



Aerofin Continuous
Tube Water Coil



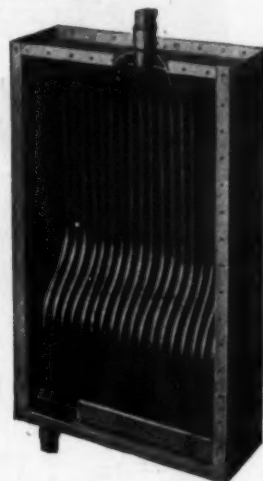
Universal Aerofin

**AEROFIN Light-weight Fan
System Heating and Cooling
Surface offers the utmost in**

**equipment for every requirement and is guaranteed
to give perfect and steady performance.**

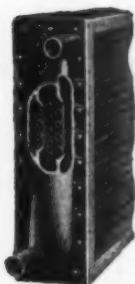
**With the war over, bigger and
better plans for installation are, perhaps, contem-
plated and it would be to your advantage to con-
sider AEROFIN in these plans. When discriminating
engineers and architects give their approval to
AEROFIN, there can be no doubt that AEROFIN has
proven its superiority by its service under any and
all conditions.**

**It would be worth your while to get in touch with
us and learn about AEROFIN and its many phases.**

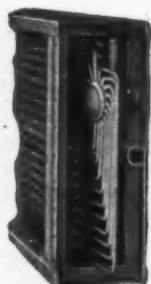


Flexitube Aerofin

**Our engineers at the home
office or any branch office can solve your prob-
lem—no matter how difficult. Why not consult
them and be convinced?**



Cleanable
Tube Unit With
Removable Header



Direct Expansion
Unit with
Centrifugal Header

AEROFIN CORPORATION

410 S. GEDDES ST., SYRACUSE 1, N. Y.

**CHICAGO • DETROIT • NEW YORK • PHILADELPHIA
DALLAS • CLEVELAND • TORONTO**

INDIVIDUAL COOPERATION *for* EVERY DEALER

The men who head the Harvey-Whipple organization—makers of Master Kraft Oil Heating Equipment—are known by their first names to the majority of Master Kraft Dealers. Every Master Kraft Dealer receives full time cooperation from the factory—whether he lives in a small town or a large city, ten miles away or a thousand. To make sure that we know the dealers' problems, we conduct our own retail division right here at the factory—"under our very noses". Master Kraft dealers are *helped* by our *retail* knowledge. They call us on the phone, visit us, talk to the heads of our organization—get personal help as friends — receive valuable counsel from a business-building standpoint.

ALWAYS A COMPANY POLICY. For more than a generation, since the days when Harvey-Whipple pioneered in the oil heating industry, *dealer cooperation* has been a definite part of our policy. Today—the same men who founded this organization still direct its aims — still maintain this organization, helping *each* dealer to make a fast-growing, successful business.

OUR DEALERS HAVE GROWN WITH US—will continue to grow. They recognize the true value in a Master Kraft Franchise. A few excellent territories are still open. Write us for details.



HARVEY-WHIPPLE, INCORPORATED
SPRINGFIELD 1, MASS.

HUSSEY

COPPER
the metal
with a
**BRILLIANT
FUTURE**

IN THE *Laboratory*...

Precision-exactness of product and quality is skillfully maintained through exhaustive tests.

IN THE *Plant*...

Precision-uniformity is closely guarded through every phase of production.

IN THE *Warehouse*...

Located in strategic manufacturing centers, huge stocks are maintained in normal times, for quick delivery.

HUSSEY

Hussey Copper Service to Industry..

Thoroughly experienced engineering and research facilities

Greatly expanded production capacity

Improved processes and equipment

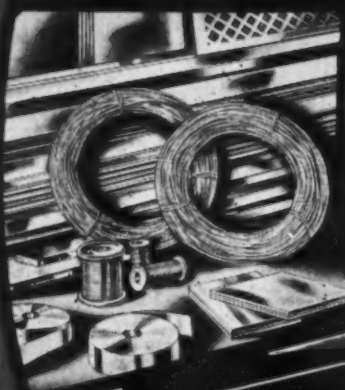
Strategically located warehouse stocks

Dependable headquarters for Copper and Copper alloy needs—when peace-time production is permitted

ON THE

Job...

Hussey Products meet your most exacting requirements and service standards.



Let Hussey engineers
work with you now.

C. G. HUSSEY & CO.

(Division of Copper Range Co.)

ROLLING MILLS AND GENERAL OFFICES: PITTSBURGH, PA.

Warehouses in Principal Cities



WANTED IN 1946
880,000
FURNACES

HOW MANY WILL BE MOR-SUNS?

After an extensive survey, a leading trade magazine estimates that 880,000 new warm air furnaces will be installed annually for the next five years—a total of 4,400,000!

That's about 25% more furnaces than the industry produced in its previous peak year. So, apparently, we face a sellers' market for the next few years—but after that—what?

MOR-SUN is looking toward the long pull. We are not out merely to sell furnaces—we are out to build permanent, mutually-profitable merchandising connections—and we know that we can do that only with a good product and a sound policy.

Sure—we intend to get our slice of that 1946-1951 pie. But while we are doing that we will never lose sight of the fact that we expect to be a major factor in the furnace industry for a long, long time.

Formal announcement of the Mor-Sun will appear in the January trade magazines. If you are on our prospect list, a representative will call with full information as soon as shipping dates can be determined.

MORRISON STEEL PRODUCTS, INC.
BUFFALO 7, N. Y.

"The Sun Never Sets with MOR-SUN!"



"There's nothing wrong with me
that a million dollars won't cure!"

Says One Dealer



" - - well, maybe I'd settle for less than a million, but that's how pepped up I am now that I'm ready for the heating equipment boom with the Rudy Franchise - I'm all set with a line with a real future in profits and satisfied customers."

If you want to be sure of a line of heating equipment that is famous for satisfaction, long life and a "million dollar" appearance, select Rudy! Write today for full details on the Rudy franchise.



AVAILABLE NOW


The XM Series Rudy Steel coal gravity furnace. Sturdy and dependable - welded and riveted with heavy 26 gauge galvanized steel casings and hood. Write for details.



FURNACE COMPANY • DOWAGIAC, MICH.



EVEN FINER **RUDY** PRODUCTS FOR THE WORLD OF TOMORROW



Because they're dependable

There's a Bethlehem Galvanized Steel Sheet for that forming job or ductwork installation—a sheet that you can rely on for ductility, for ease in working, for uniformity in gage, size and flatness. For there's one thing about Bethlehem Sheets—they're dependable, all the way along the line.

BETHLEHEM
STEEL SHEETS

**BETHLEHEM STEEL
COMPANY**

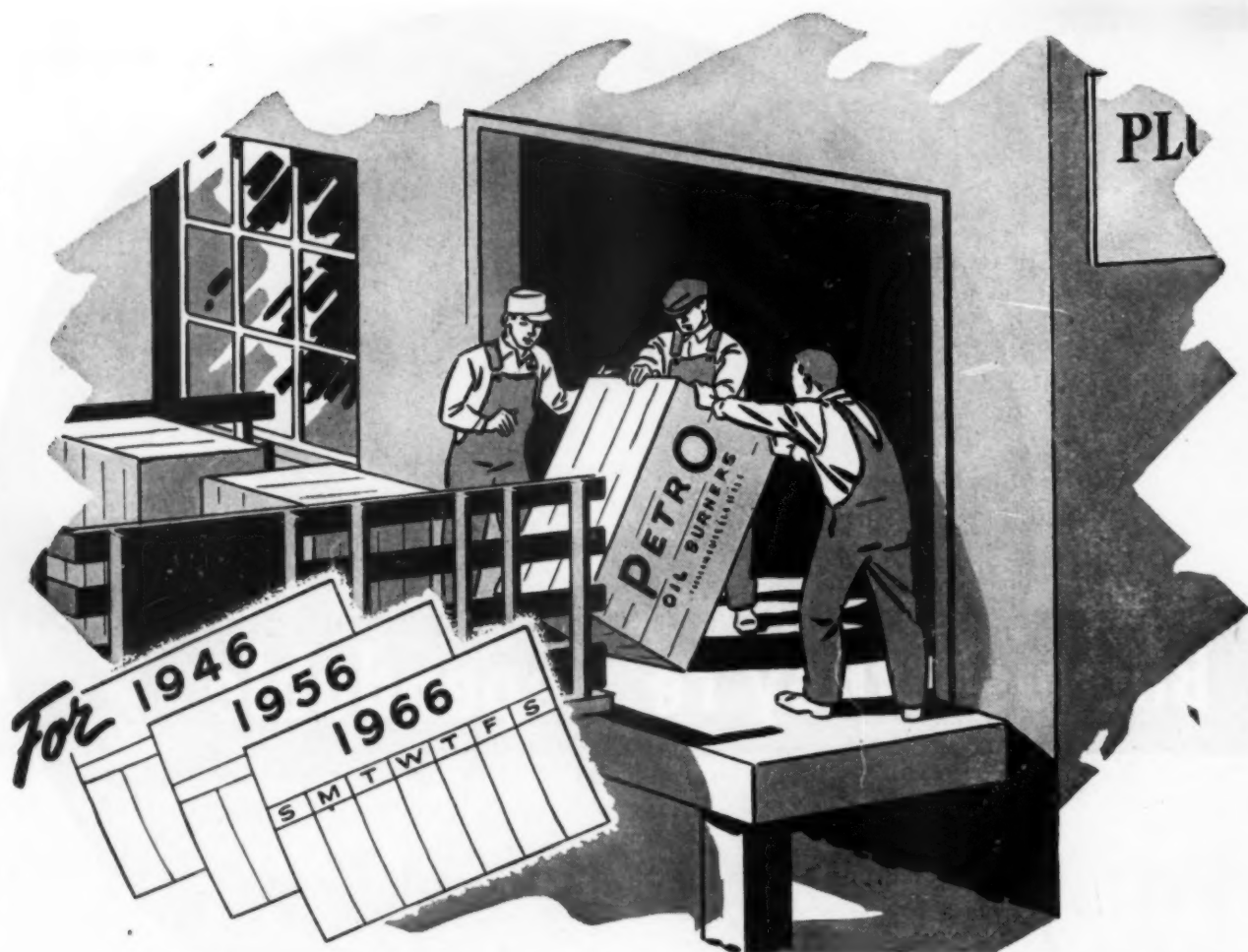
General Offices: Bethlehem, Pa.

*Bethlehem Steel Export Corporation
New York*



**BETHLEHEM
STEEL**





...YOUR BEST ASSURANCE OF EVER-GROWING OIL BURNER SALES IS PETRO

ANYONE CAN SELL oil heating equipment today. But to maintain volume sales in the years after the first brisk demand has levelled off, it will mean getting there first with oil burners that have the most to offer!

The new Petro Oil Heating Equipment not only will have many *new* sales features to give you this selling advantage, but will be value-priced to meet the toughest competition! New improvements in design insure continued Petro popularity with burners

well-known for their economical and dependable operation. An attractive... styled-for-eye-appeal line covers the complete capacity range for both "conversion" burners and "units".

And of particular value to you... every Petro Oil Heating System you install means a satisfied customer. It is your best assurance of volume sales in 1956 and 1966 as well as today! *Petro Oil Heating Equipment is distributed through heating wholesalers.*

Write for your nearest heating wholesaler today!

PETROLEUM HEAT AND POWER COMPANY • Stamford, Conn.

Petro Fuel Oil bulk plants, distributing terminals and facilities in: Mt. Vernon • Newark • New York
Baltimore • Stamford • Boston • Long Island • Washington • Providence • Philadelphia • Chicago



PETRO

REG. U. S. PAT. OFF.

MAKERS OF
GOOD OIL BURNING
EQUIPMENT SINCE 1903



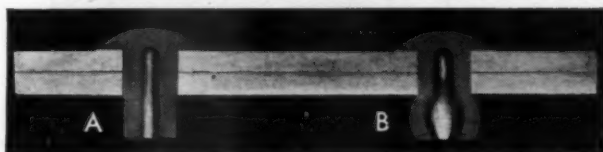
These fast-working fasteners

help simplify design
and speed production

You've heard of Du Pont Explosive Rivets. During the war, aircraft builders used them extensively in constructing Corsairs, Fortresses, Marauders, and many other famous planes. They permitted simplification of designs and helped eliminate riveting bottlenecks.

Today, Explosive Rivets of a new, improved design* are ready for countless applications in peacetime industries: automotive, refrigeration, housing, air conditioning, heating and ventilating, radio, boat building, railroad car manufacturing, household appliances, metal furniture and others.

EXPLOSIVE RIVETS ARE EASY TO USE



Cross-section photo above shows an unexpanded Explosive Rivet (A) inserted in hole. Rivet shank contains a small explosive charge. Application of an electrically heated Du Pont Riveting Iron to Rivet head fires the charge. The Rivet shank expands, filling the hole completely and forming a barrel-shaped head that locks the Rivet (B) securely in place. Result: a strong, tight joint. Setting Explosive Rivets is a simple two-step operation requiring from 2 to 4 seconds. Anyone can do it. No finishing operations are necessary because of the neat, smooth heads.

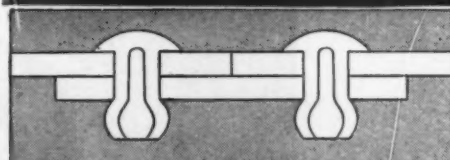
Write for Complete Information Today. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department AM-3, Wilmington 98, Delaware.

SIZES AND TYPES AVAILABLE

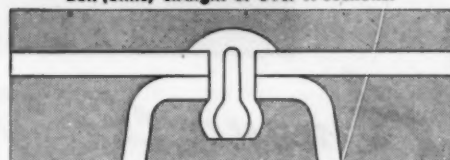
Head Types	Standard Diameters	Grip Lengths
Modified Brazier and Countersunk	1/8" 5/32" 3/16"	1/8" (for thicknesses up to 1/8") 1/4" (for thicknesses from 1/8" to 1/4") 3/8" (for thicknesses from 1/4" to 3/8") 1/2" (for thicknesses from 3/8" to 1/2") Also in 1/16" increments
Other head types and diameters will be produced		
MATERIALS Explosive Rivets are made of various materials: Aluminum alloys: 17S-T, 52S, and 56S (for magnesium sheet w.c.s.), Brass, Copper, Mild Steel, Monel Metal and others,		

*The improved Explosive Rivet has a straight cavity extending the entire length of the shank. This new design eliminates necessity for close tolerance drilling and provides wide grip ranges. It makes this Rivet particularly adaptable to mass production methods.

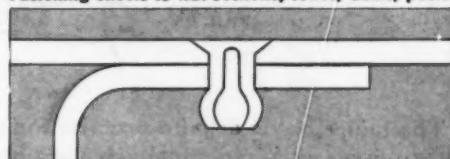
Note these typical applications



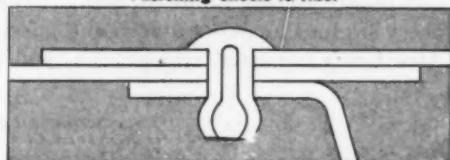
Butt joints, straight or over H-sections.



Fastening sheets to hat sections, tubes, ducts, posts.



Fastening sheets to ribs.



Lap joints fastened to ribs.



REG. U. S. PAT. OFF.

DU PONT EXPLOSIVE RIVETS



Among the Finer Things to Come . . .

NEW *Gar Wood* AUTOMATIC HEATING UNITS

THE ORIGINAL OIL-FIRED BURNER UNIT

The future holds definite promise for the new better-than-ever Gar Wood Home Heating Units . . . greater acceptance among home owners . . . easier to sell from every angle. The new oil-fired and gas-fired Tempered-Aire Units are tried and proved, and they will be in

production as soon as conditions permit. Look ahead. Plan to sell Gar Wood. Write today for the free booklet "Why You Should Be a Gar Wood Dealer". Gar Wood Industries Inc. will also manufacture Boiler-Burner Units, Conversion Burners and Water Heaters.

This advertisement is an advance description of postwar equipment which is not now available. It does not constitute an offer to sell or deliver and no suggestion is made that orders be solicited. This notice will cease to apply when ceiling prices have been established by the O.P.A.

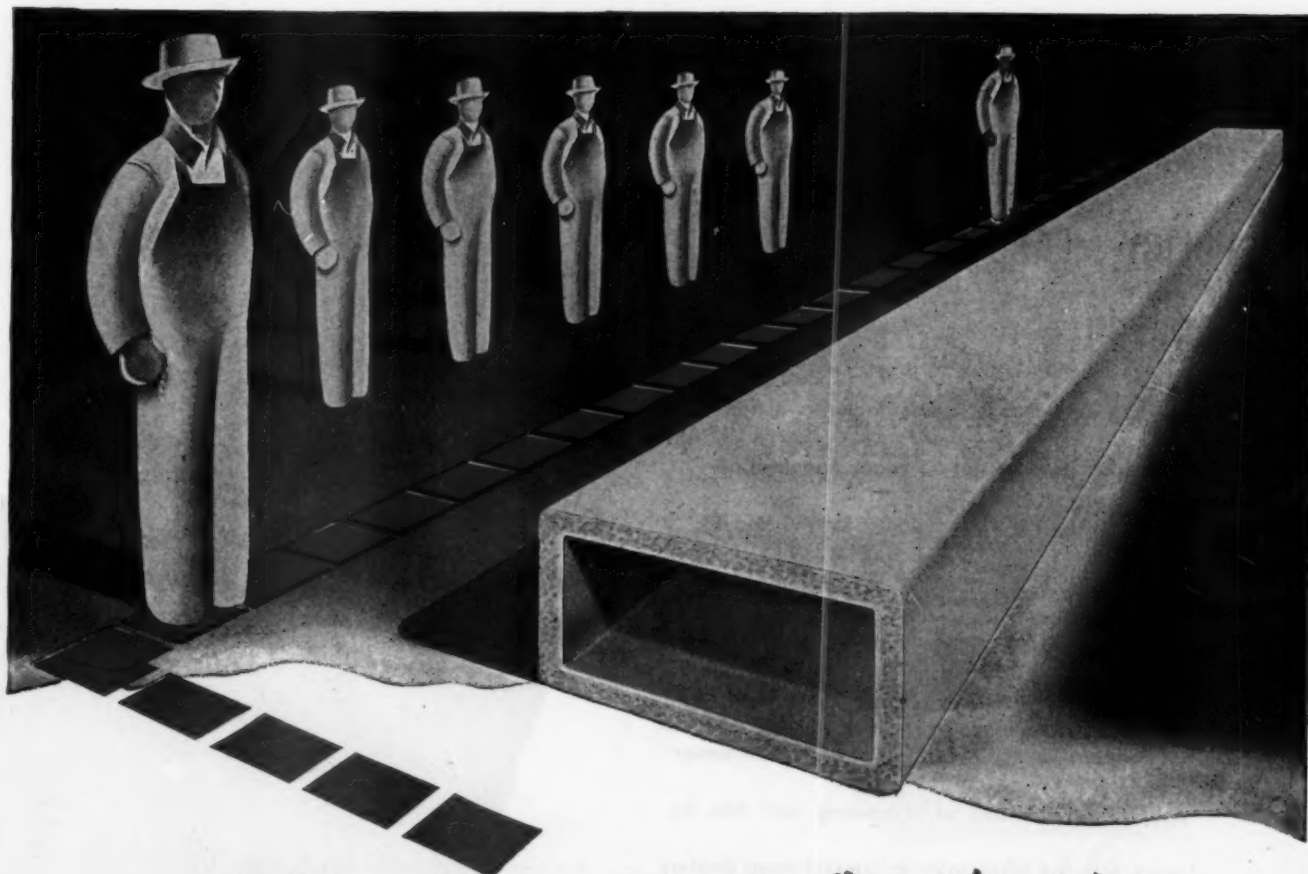
GAR WOOD INDUSTRIES, INC., HEATING DIVISION

7924 RIOPELLE STREET

DETROIT 11, MICHIGAN

Canadian Distributors: Engineering Industries, Ltd., 282 Dupont St., Toronto, Ont.

HOISTS and BODIES . . . WINCHES and CRANES . . . TANKS . . . ROAD MACHINERY . . . MOTOR BOATS



5 Messy Jobs Get the "go by"!



BLOW HOT! BLOW COLD! Carey-duct will deliver the load with minimum change in temperature.



40% TO 50% QUIETER. Carey-duct carries higher velocities . . . means greater capacity.

Carey duct—the prefabricated asbestos duct—is perfect for existing buildings, as well as new. It eliminates 5 out of 7 major installation operations . . . the 5 most costly in time and labor—and also the messiest.

Careyduct checks out: (1) cutting plaster for furring; (2) insulating; (3) acoustical treatment; (4) putting up framework; (5) installing lath and plaster. Your jobs aren't held up waiting for other crafts.

You'll "make out" better on air conditioning jobs in both old and new buildings by using Careyduct—the prefabricated, acoustical, insulated, fireproof, rust-proof duct.

For more information consult your nearest Carey Branch or write—



INSTALLED FASTER than ordinary duct . . . by any qualified sheet metal worker.



GOOD LOOKING. No unsightly joints. Takes any finish or looks good unfinished.

THE PHILIP CAREY MANUFACTURING CO.
LOCKLAND, CINCINNATI 15, OHIO

Carey

IN CANADA: THE PHILIP CAREY CO., LTD.
OFFICE AND FACTORY: LENNOXVILLE, P. Q.

Careyduct • Industrial Insulations • Rock Wool Insulation • Asbestos Shingles and Siding • Asphalt Shingles and Roofings
Built-up Roofing • Roof Coatings and Cements • Waterproofing Materials • Asphalt Tile Flooring • Pipeline Felt
Expansion Joint • Asbestos Wallboard and Sheathing • Corrugated Asbestos Roofing and Siding • Miami-Carey Bathroom Cabinets and Accessories

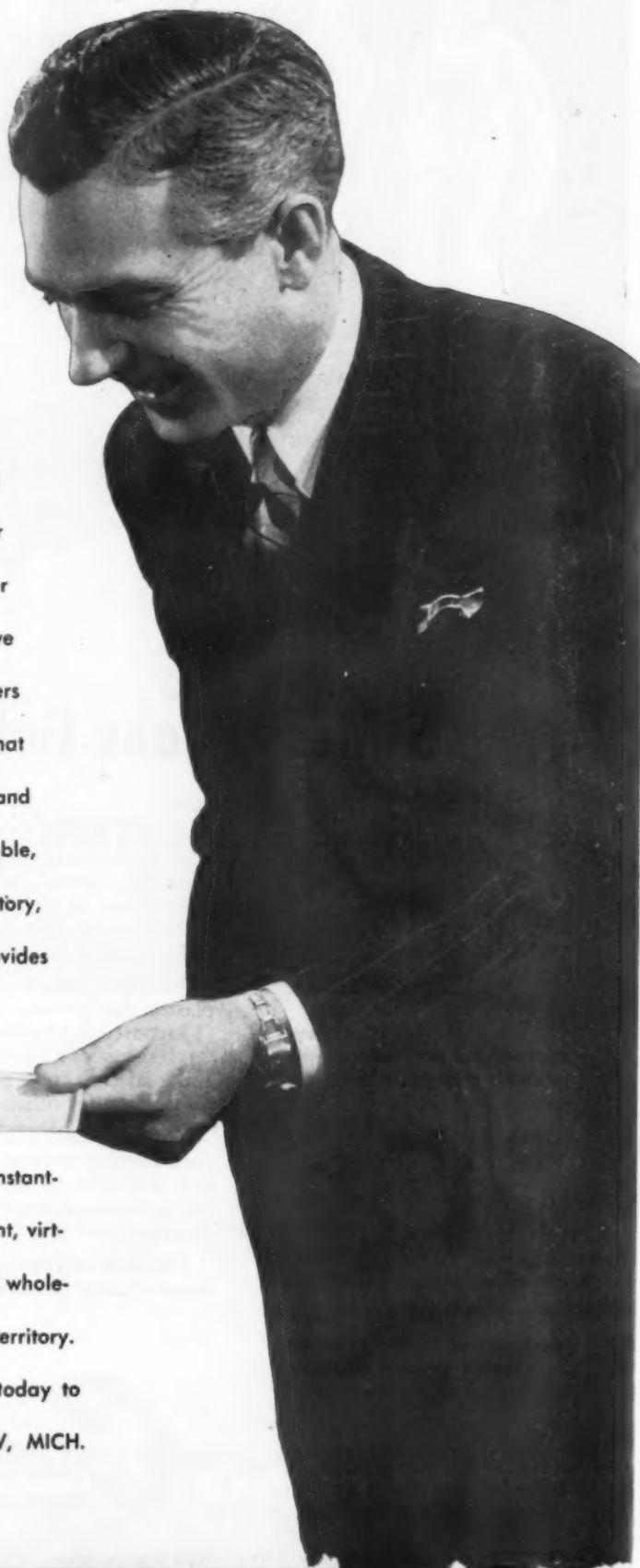
JOBBERS!

HERE'S HOW THE J & C SALES POLICY MEANS MORE PROFITS FOR YOU

The Jackson & Church Co., manufacturers of fair-priced quality products for 65 years, has developed the following rigid sales policy for the benefit of all concerned.

The jobber is our only outlet for our heating and air-conditioning equipment. He receives our full cooperation for the development of consumer dealerships. Instead of competing with him we work with the wholesaler to interest more dealers in buying from him. Jobbers are the type that can assure dealers complete merchandising and engineering assistance. They will have available, for spot shipment to any point in their territory, the full line of J & C equipment which provides maximum market coverage.

This program, backed by our policy of constantly improving our complete line of equipment, virtually guarantees more profits for the J & C wholesaler. There may be an opening in your territory. For complete information, write or wire today to JACKSON & CHURCH CO., SAGINAW, MICH.



IT WILL PAY YOU TO TIE IN WITH



MORRISON *Firststream*

Outstanding
BLOWER WHEELS

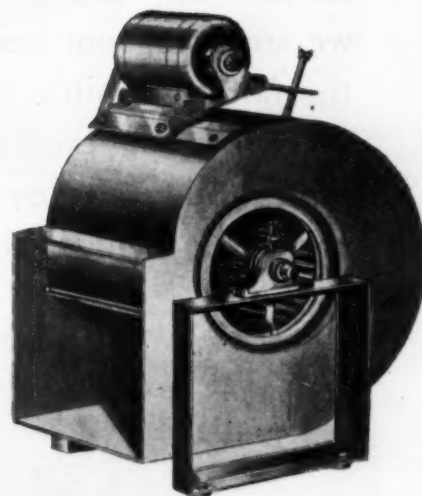
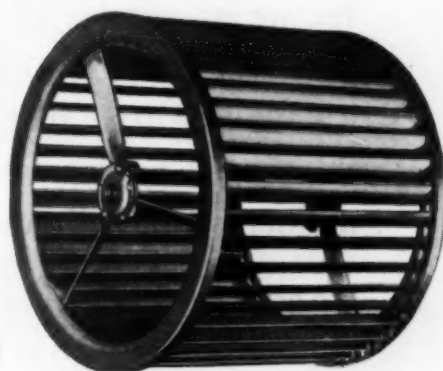
+

- A**-YOUR MFG. FACILITIES
- B**-OUR STAMPED HOUSING SQUARES
- C**-OUR ENGINEERING SERVICE

RESULTS

YOUR BLOWER PRODUCT

- A**-ABSORBING YOUR OVERHEAD
- B**-CREATING ADDITIONAL WORK
- C**-SAVING IN PRODUCTION COST
AND PURCHASED MATERIAL



*Catalogue showing how you can
fabricate your blower assembly
now available. Write for your
copy today.*



MORRISON PRODUCTS, INC.

EAST 168TH & WATERLOO ROAD
CLEVELAND 10, OHIO

IT'S TRUE . . . they're off the shelf

Yes, we are shipping Toridheet Oil Burners in both Rotary and Gun types. Oil burning furnaces are coming off the line. But, it's equally true that due to the current facts of life, our shipping requirements and our production results are for the moment a long distance apart.

The great public acceptance of Toridheet heating equipment in its manifold varieties is at the moment flattering and embarrassing.

We know the words you are thinking! All we can say is, that we are doing our best to cope with a difficult situation in the fairest possible way. We are deeply conscious of the pressure being exerted on you. We are grateful to distributors, dealers and consumers for their friendly patience . . . and we'll "deliver the goods" as fast as we can. Thank you!



Model 5



Rotary Burner

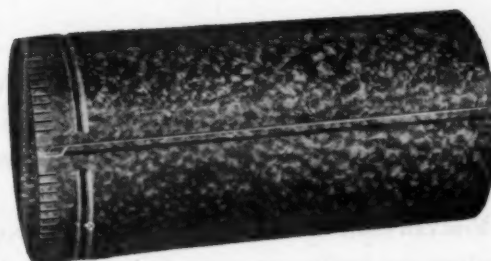
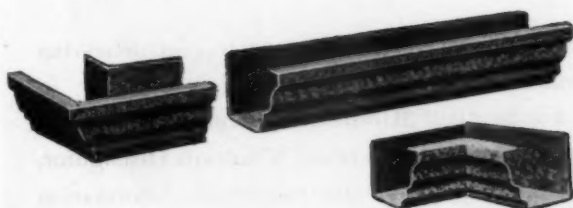
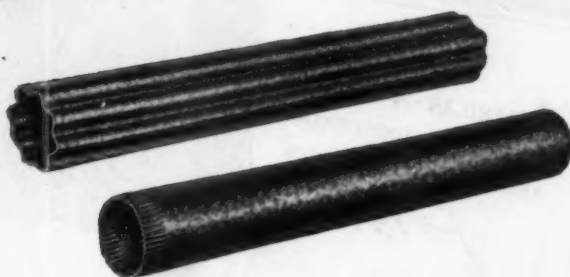
TORIDHEET DIVISION

CLEVELAND STEEL PRODUCTS CORP. • CLEVELAND 2, OHIO

*Oil Burners • Air Conditioning Units • Oil-Burner Boilers
Coal and Gas Furnaces • Water Heaters*

The Need is Great—

for these fundamental accessories to make the repair to old premises and to equip the newly planned building. Wheeling Conductor Pipe, Eavestrough and hundreds of sheet steel and wire products, including Steelcrete Expanded Metal, backed by 55 years of successful quality manufacture, direct you to Wheeling.



WHEELING CORRUGATING COMPANY *Wheeling, West Virginia*

New York Richmond
Philadelphia Atlanta
Chicago Kansas City
St. Louis Minneapolis



Buffalo New Orleans
Louisville Cleveland
Detroit Pittsburgh
Boston Houston



THE curtain is about to go up. The spotlight is on. A huge audience eagerly waits. With every member of the cast a tried and true performer, a hit attraction is assured.

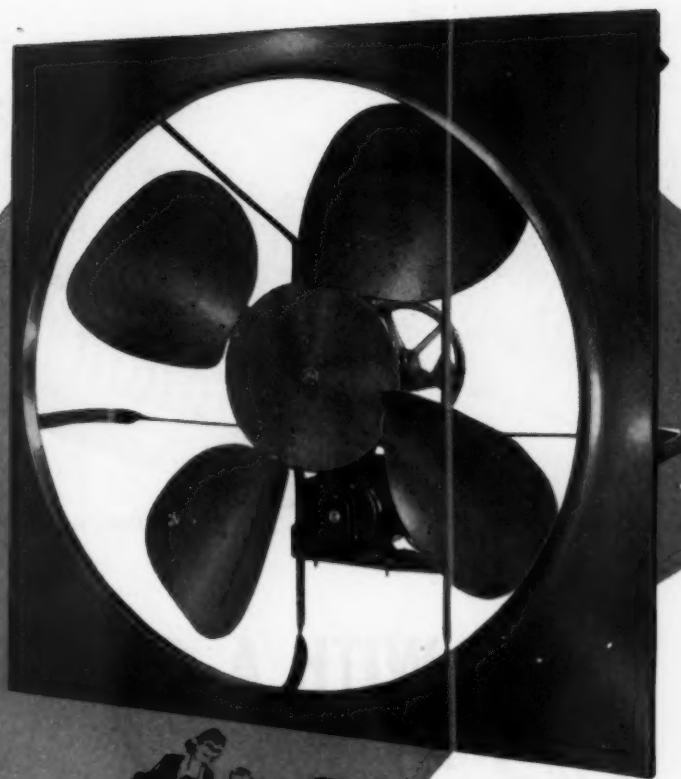
You can share in the bright future of this popular line, for beginning now, American-Standard will make more and more SUNBEAM Winter Air Conditioners and Warm Air Furnaces available to you.

These well-known and widely advertised quality products have been Serving the Nations' Health and Comfort for many years. They are time-tested, performance-proved.

Facts that make them easier to sell . . . qualities that insure customer satisfaction.

For details of SUNBEAM products, contact your nearest American-Standard Wholesale Distributor. Through him you also can obtain information about our FHA Time Payment Plan for modernization jobs. **American Radiator & Standard Sanitary Corporation**, P. O. Box 1226, Pittsburgh 30, Pa.





the all-purpose fan

That's the name for the Johnson belt-driven propeller fan shown above. It's big and its lusty . . .

it has an appetite for work and no job is too tough to handle.

★ Displacing air at a rate of 4,500 to 25,000 cubic feet per minute (depending on size) it is capable of giving proper ventilation to small or large residences, offices, restaurants, factories, class rooms, garages, warehouses or any of a hundred different places. ★ The new 1946 model is now ready

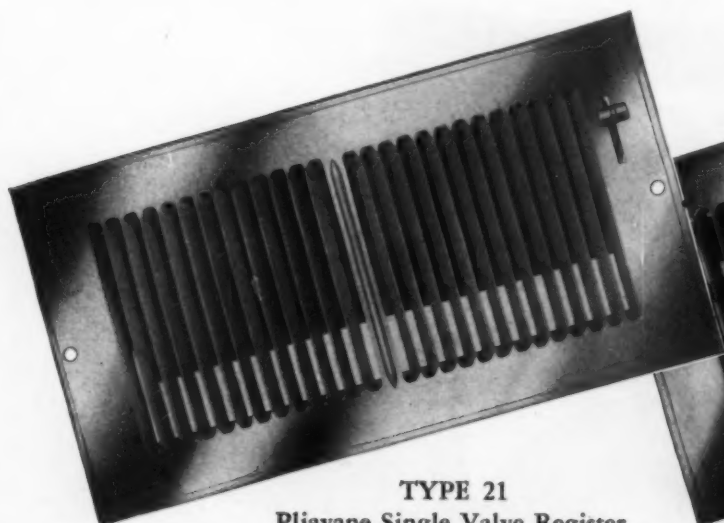
for delivery . . . sizes range from 24 inches to 54 inches. Order today . . . and save delay.

Now supplied with shipping crate that can be used as plenum chamber for economical attic installation.

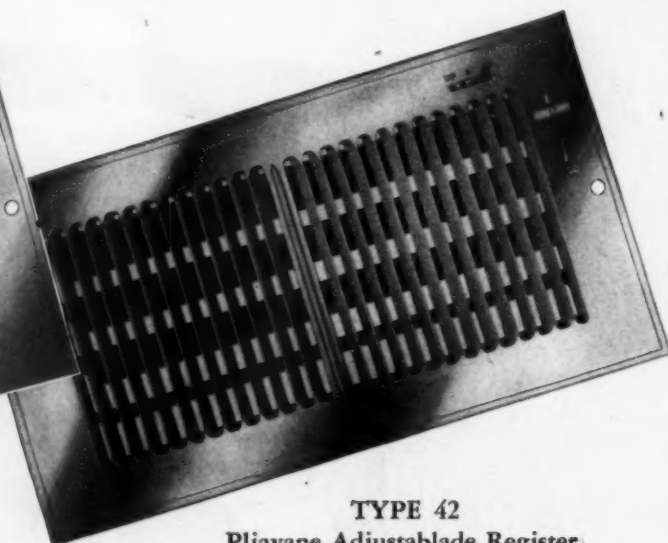
Johnson Fan & Blower Corp.

1319 West Lake Street Chicago, Illinois





TYPE 21
Pliavane Single Valve Register



TYPE 42
Pliavane Adjustablade Register

SHAKE HANDS WITH A COUPLE OF *Old Friends!*

HERE'S the economical bar type register that's ideally suited to the thousands upon thousands of new homes that will go up the country over in the months to come. You know it of old — the Pliavane design which allows for adjustable deflection of the airflow either upward or downward. It's the kind of

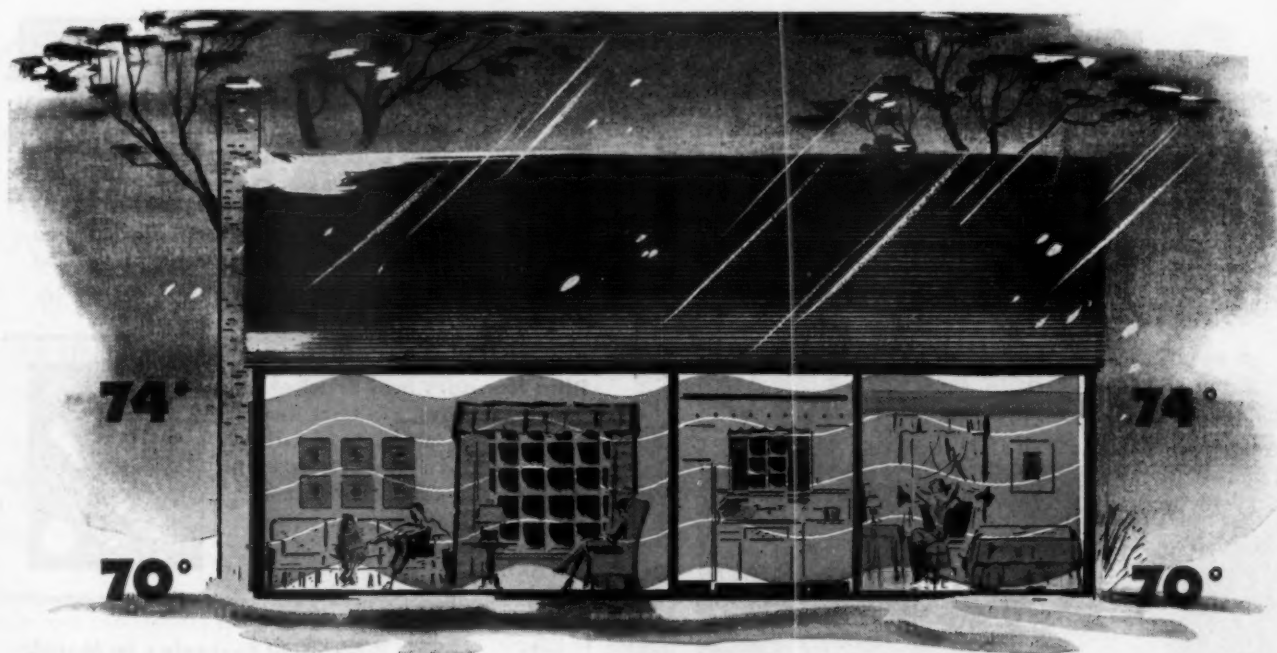
an outlet that makes a satisfied customer because of its built-in efficiency and its pleasing appearance. In looks, it's suitable for the mansion on the hill — in cost it's just the ticket for the inexpensive cottage — in efficiency it's ideal for every type of installation.



TUTTLE & BAILEY
INCORPORATED

NEW BRITAIN

CONNECTICUT



*You can deliver
constant floor-to-ceiling comfort..*

WITHOUT EXPENSIVE EXTRA CONTROLS

NO extra controls are needed to provide even warmth from floor-to-ceiling when you install a Perfection Superfex Furnace.

The Three-Stage principle in Superfex Furnaces *adjusts itself* to the proper heat level for any weather. Pilot, low and high fire are all *automatically* controlled. The synchronized blower delivers a continuous, positive flow of fresh, warm air all over the house. Customer

satisfaction is *built in*—you won't need to add it on.

Balanced heating is no longer the luxury of the few. Superfex brings complete 24-hour comfort to new millions of moderate-priced homes. And every Superfex feature has been tested under extreme wartime winter conditions in *thousands* of such homes.

Write today for "Super Comfort with Superfex"—a new booklet which explains in detail the basic three-stage heating principle built into Superfex Furnaces.



Superfex FURNACES


PERFECTION STOVE COMPANY

7796-E Platt Avenue • Cleveland 4, Ohio

6 ways to fasten metal parts in 1/2 second with NELSON *automatic* STUD WELDING



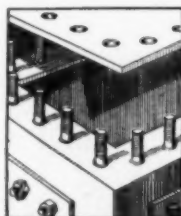
The **NELSON Stud Welder** is fully portable, works from any standard welding generator, and welds in any position. Studs from $\frac{1}{8}$ " to $\frac{3}{4}$ " in diameter and up to 8" in length are welded with complete fusion to metal in $\frac{1}{2}$ second. To speed production, to do a *better* job faster, put this versatile tool on *your* job. The facts are yours for the asking . . .

 **WRITE NOW** for complete information, or to arrange a demonstration in your own shop at your convenience . . .

NELSON SALES CORPORATION LORAIN, OHIO

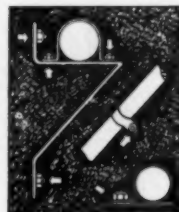
Representatives and Distributors for
Nelson Specialty Welding Equipment Corp. Nelson Stud Welding Corp.
San Leandro, California Lorain, Ohio

STRAIGHT STUDS



Securing Covers: Covers of all kinds, with or without gaskets, can be secured quickly and easily. Usually the cover itself can be used as a template; studs are welded through the cover holes.

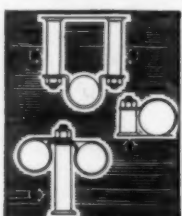
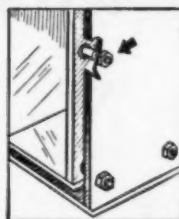
Pipe Hangers and Brackets: There are scores of faster, better ways to secure pipe, tubing or conduit with stud welding. Welds can be made in all positions; welder is completely portable.



General Fastening to Metal: Wherever brackets or attachments must be secured to sheet, plate or structural metal, the stud welder can do the job at the rate of one-half second or less per weld.

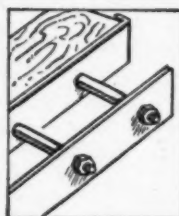
SHOULDER STUDS

Metal Liners and Jackets: The shoulder stud provides correct spacing between liner and casing or jacket, and no holes pass through the liner which can be left smooth and unblemished.



Securing Pipe, Cable and Hose: Shoulder studs provide a fast, convenient method of attaching many types of pipe, conduit, cable, tubing or hose; three typical applications are illustrated at left.

Spacer and Bumper Bars: Spacer bars, bumpers and guard rails can be attached simply and economically with shoulder studs. Portability of the stud welder makes the job easy on large assemblies.



OTHER NELSON FLUX-FILLED STUDS



Check

these ADVANTAGES of the Timken Profit Franchise

Complete line of oil heating equipment for new homes and modernization.

Quality products which can be sold successfully at a profit.

Outstanding sales features, including the famous Timken Wall-Flame principle which requires only one moving part.

Savings up to 25% on fuel and electricity proved by reports from thousands of users.

Consistent national magazine and factory-paid key city newspaper advertising.

Well-organized direct mail programs for dealers' prospect lists.

Factory cooperation on dealers' local advertising program.

Hard-hitting dealer sales helps and sales promotion material.

Factory-conducted sales and service schools.

Unmatched public acceptance of all products.

Year after year, the Timken franchise has consistently made more money for dealers than has been the most sought-after franchise wherever oil heating is sold. It is in every sense the **PROFIT FRANCHISE**.



A lot can happen in 20 years!

Plenty has happened since the introduction of Timken Oil Burners in 1925! The picture tells the story.

Take the product, for example. The big, cumbersome Timken "Arrow" Conversion Burner, shown in the background, was accepted in 1925 as "the finest of its day." Many are still giving satisfactory service. But this complicated piece of machinery weighed 320 pounds, had over 480 parts, and retailed at \$625.00.

Contrast this with the new improved Timken Silent Automatic Wall-Flame Burner, shown in the foreground. *It sells for approximately half the price of our first burner.* It is far simpler and more reliable. When installed in existing furnaces and boilers, or used in Timken Silent Automatic Complete Units and Water Heaters, it is so efficient it actually saves up to 25% on oil and electricity costs and is so fully automatic that it even lubricates itself.

Timken's advanced engineering is the answer to these far-reaching improvements. Through constant research, more *real* progress has been made by Timken in oil burner design during these 20 years than has been made in any other type of home equipment.

Surveys show more people than ever before are going to buy comfort with automatic heating in the years to come. In the last four years of peacetime production, 1938 through 1941,

oil burner annual sales jumped more than 100%. It is significant to note that *Timken Dealers* got a far greater share of this increased dollar volume than any other group of oil heating dealers.

Doesn't this all add up to profit opportunity for you? Take advantage of it now, and cash in on the millions of dollars that will be spent for modernization and new home construction during the next few years. Set the wheels in motion by writing for complete information on our dealer profit franchise.

TIMKEN

Silent Automatic

OIL HEATING PRODUCTS

Quality Home Appliances for Comfort,
Convenience and Economy

20 Years of Faithful Service to American Homes

Division of THE TIMKEN-DETROIT AXLE CO.
Detroit 32, Michigan

Sit right down and write yourself a memo...



YES, SIR, *now* is the time to look into the TEMCO set-up—what's behind it—what's ahead of it... if you want to make money in the heating business.

The Tennessee Enamel Manufacturing Company is all set to go with a *new* product—The TEMCO Gas FLOOR FURNACE—developed before the war, then re-engineered and improved during the past three years when we couldn't make 'em.

The product is *ready*... for a waiting market... and so is a rip-snortin' sales campaign. This is a package of selling tools—using every form of advertising and sales promotion—ready to go to town for TEMCO dealers.

OBEY THAT IMPULSE!

If this is interesting to *you*—don't waste a day in getting complete information! Write us for the name of the nearest TEMCO distributor, and he'll give you the whole picture... of the huge postwar home heating market... and of your opportunity to cut yourself a thick slice of profits.

TEMCO also manufactures a complete line of SPACE HEATERS, combining the ultimate in space heating efficiency with appealing beauty of design.

FOUR  AWARDS



TENNESSEE ENAMEL MFG. COMPANY
Nashville, Tenn.



Quick Facts about the new TEMCO Gas Floor Furnace

Re-engineered, to include new features developed in wartime experimentation.

One of the first to gain A. G. A. APPROVAL under new and stricter specifications.

Burns all Fuel Gases—natural, manufactured and L-P (Liquid Petroleum) with equal efficiency.

Fully Automatic—Minneapolis-Honeywell thermostatic controls, optional.

100% Safe—fully guarded by safety devices built in and included in selling price.


Has the new "WHISPER-QUIET BURNER"—Your assurance of silent flame performance.


Easy to install.




... and it's just as Important

to take the wraps off stoker franchises

 Sure, any franchise offers the possibility of fat profits. Only sometimes there's a difference of opinion over who's going to do the fattening, the dealer or the manufacturer. That's why we, at Fairbanks-Morse, shun the *pig-in-the-poke* way of doing business and invite every candidate for our dealer franchise to take a real look at what he's getting before he signs anything.

 We invite him to investigate the prestige value of our 115-year-old name and reputation . . . and weigh the competitive value of a line big enough to help him bid on every type of domestic and commercial installation, advanced enough to give him exclusive sales points in connection with each model!

 We invite him to satisfy himself concerning our proved record for providing experienced engineering help . . . and to dig into such concrete evidence as that printed below concerning the sales and merchandising backing we're prepared to deliver.

☆ Thus with our franchise, the question of who's responsible for fattening profits is settled long before any commitments are asked or made. Why don't you write or phone today for details and for information on whether one of our few remaining dealer openings happens to be in your territory?



Fairbanks-Morse Automatic Coal Burners

THIS MONTH 30 MILLION AMERICAN FAMILIES WILL BE SOLD ON FAIRBANKS-MORSE STOKERS

When Fairbanks-Morse sets out to gain the immediate advantage for its dealers, it doesn't fool around. This month, for instance, it is turning over to them the sales opportunities created by its hard-hitting campaign in this border-to-border list of publications. Check it for what it means to you, locally as well as nationally.

Chicago Tribune
Milwaukee Journal
Des Moines Register
St. Louis Post Dispatch
Kansas City Star
Omaha World Herald
Grand Rapids Herald
Minneapolis Tribune
Rochester Democrat & Chronicle
LaCrosse Tribune Leader Press
Toledo Blade
Sioux Falls Argus Leader
Fargo Forum

Cedar Rapids Gazette
Knoxville News Sentinel
Cleveland Plain Dealer
Cincinnati Inquirer
Nashville Tennessean
Birmingham News & Age-Herald
Atlanta Journal
Raleigh News Observer
Norfolk Ledger Dispatch
Norfolk Virginia Pilot
Washington Times Herald
Philadelphia Inquirer
Harrisburg News Patriot

New York Times
Boston Herald
Denver Post
Salt Lake City Tribune
Boise Statesman
Seattle Post Intelligencer
Chattanooga Times
Buluth News Tribune
Ft. Wayne Journal Gazette
Terre Haute Star Tribune
Beloit, Wisc. News
Three Rivers, Mich. Commercial
Freeport Journal Standard

Statement of Position—

Until the present tight steel situation is eased, there will be an unbalanced condition in all steel stocks.

There are three principal reasons for this:

1. Labor and coal shortages are currently lowering steel production.
2. Every industry is anxious to get on with reconversion and peacetime production.
3. There is a tremendous backlog of maintenance and repair requirements.

Ryerson stocks, largest in the nation, reflect current conditions. And because of the great load, it is not always possible to supply the desired steel or deliver available steel as quickly as usual. But we are doing everything we can to satisfy every customer's requirements.

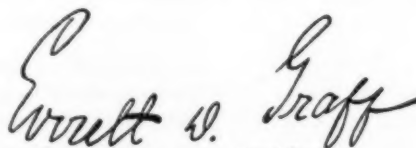
When a certain kind or size of steel is not immediately available, every effort is made to suggest satisfactory alternates which buyers may use with confidence.

Ryerson's 103 years of experience in maintaining large and complete stocks

and working closely with all industries, makes the recommendations of Ryerson metallurgists and engineers particularly practical and helpful.

We thank our customers for their courtesy and patience, for the confidence they have placed in our judgment when alternates for wanted steels have had to be offered, and for understanding our position.

Ryerson will continue to serve you to the best of its ability from its eleven strategically located plants. Stocks will be brought to normal as quickly as possible. This means that Ryerson will be among the first to have more complete stocks of present scarce steels—that Ryerson will continue to be the largest stock source for steel in the country.



President

JOSEPH T. RYERSON & SON, INC.

RYERSON STEEL

Steel-Service Plants at: Chicago, Milwaukee, Detroit, St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston



Headaches in the Postwar Picture

WE have come, now, to the end of an era in warm air heating. The era began with the first World War and is closing, now, with the end of the second World War.

Short though this era may seem, business-wise these twenty five years have seen warm air heating rise from a position of hesitant acceptance by home owners to the position of a preferred science of heating, universally accepted.

In these twenty five years, warm air heating, by reason of a most intensive and continuous program of research, has emerged from an every-man-for-himself conglomeration of rules of thumb to a true science based upon the study and research of hundreds of individuals and agencies.

In these twenty five years, warm air heating has come out from under the shadow of "hot air" and is today synonymous—in the home owners mind—with "winter air conditioning."

In these twenty five years, speculative and contract builders have ceased buying warm air because it is the cheapest type of heat and now devote a very appreciable portion of their sales talk to the economies, healthfulness, satisfaction, comfort which winter air conditioning (with warm air) insures.

In these twenty five years, even the reluctant architects have come to admit that warm air winter air conditioning fully meets the most exacting specifications of home buyers and architects were, at the beginning of World War 2, recommending warm air winter air conditioning in the largest, the most elaborate, the most expensive residences.

This list of attainments during the last twenty five years could be amplified many times. But it is not the ground gained during this era which interests us most at the moment.

What does interest us, today, is—how can we maintain the leadership already established and how can we obtain an expanding acceptance in the future?

Though the future picture is not now wholly in sharp focus, certain problems we have to solve are already apparent.

(1) The status of warm air heating as THE preferred type of residential heating will be challenged

in a bitter post-war battle wherein national advertising programs running into the hundreds of thousands of dollars financed by whole industries, and using such media as magazines, radio, newspapers, direct mail and personal sales campaigns will seek to convince home owners that competitive forms of heating are better, more modern, than warm air.

(2) Home owners have been led to believe that revolutionary new forms of heating are in the offing. Though the details of these revolutionary systems are exceedingly misty, the public is convinced such systems are coming and a tremendous effort will have to be made to convince the public that warm air winter air conditioning offers everything science declares necessary in heating.

(3) We are entering a new era in home construction. Houses will be smaller; heat losses will be down in the 50,000 Btu range; tightness will be required; there may be few basements; room arrangements will be radically changed; prefabrication looms as a possibility. To meet these new constructions will require heating plants not offered before the war.

(4) Mass production companies which have never made heating equipment will be in the heating field. To get distribution for the volumes visualized these companies will certainly launch dealers of a type never encountered before. Department stores, home appliance specialty organizations are the first beginnings.

(5) Home construction may reach annual volumes never before experienced. Existing warm air equipment manufacturers amplified by the incoming mass producers will certainly produce all the equipment needed; probably there will be enough dealers when the new distribution plans develop; but there has not been for some time nearly enough skilled and trained mechanics to install the volume of heating equipment visualized. Getting more trained mechanics looms as the number one headache of the future.

Much more might be said, even more problems might be enumerated, but there are enough headaches in the five problems above to satisfy any pessimist. If ever there was a need for members of an industry to get together for mutual support and assistance—that time is now.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Arnold Kruckman's

Washington Letter

★ ★ ★ ★ ★ ★ ★ ★ ★ ★



Pressure Groups in Government

WASHINGTON (which means the Federal Government) is no longer a remote, seldom considered influence in business but is, day by day, in every way, becoming a more *intimate* part of the daily business of all units of American industry and commerce, regardless of size or service. The fact can easily be demonstrated by figures.

In 1914, during the months before the first world war, the telephone lines carried outward daily through the Washington switchboard an average of 1,000 long distance calls. During the short period of the war itself (1914-1919) the long distance telephonic traffic in Washington doubled, to 2,000 calls. After the war, in the hectic "twenties," when there was a chicken in every pot and two cars in every garage, the Washington long distance calls increased to the then amazing total of 4,000 daily. Before the grand smash that brought into existence the "New Deal" the calls ran up to 5,000 daily. It was supposed this was pressing the limit for some time to come; but with the feverish and fantastic expansion of Federal activities, which came with the "New Deal," the daily calls to far parts of the nation increased from month to month. There was a time when it was as natural for a government clerk to call up San Francisco or Alaska, as it was to call a man in an office on the floor below.

Heavy Telephone Traffic

When the United States reached Pearl Harbor, the daily total exceeded 10,000 calls daily. Both the tolls and handling gave concern to government fiscal supervisors, and to the telephone people who were responsible for the machinery of operating the lines. But obviously all restraints were off when the organization for war got under way. Those who went through the war actively connected with military or civilian business know that the attitude towards telephone calls was about as careless as is the average householder's attitude towards water. No one knows the daily average of long distance calls originating in Washington at the height of the war activity. The amazing certainty is that now, after the war, 50,000 long distance calls are made from the Capital each day of the week. The figures are supplied by the telephone company. This traffic, originating in Washington, from Government sources and from private offices and dwellings

is why we say government is *intimate* to all business.

It requires little reflection to realize that this average of more than 2,000 long distance calls during each of the 24 hours of the day, or more than 35 calls each minute of the day—workday, Sunday, holiday—is significant. It means that the problems of business require constant clarification from the national seat of the Federal Government. It is apparent there are few actions now developed without first consulting some one in the Capital.

Bureaucrats Not to Blame

The story of the twenty-five fold expansion of the telephone long distance traffic out of Washington in a score and half of years should explain why the Capital inevitably has had an almost incredible increase in the numbers and the functions of its bureaucracy. The gathering of the threads and strands of government control in Washington has been natural and logical under the conditions that developed after the first world war. Patently, the creation of the bureaucracy has been an unavoidable effect. In essence the reason for it should not be pushed off on the people who are the bureaucrats. It rests mainly with the business people out there in the 3,000,000 or 4,000,000 square miles of the United States, who have thrust most of their problems for solution upon the functionaries in Washington. Some observers here think more hard work in thinking, more exercise of the brain cells, and less greed and selfish demand for privileges and favors and advantages, among the millions of business people in the wide open spaces, might have kept down the expansion of minutely detailed government functions epitomized in those 50,000 daily long distance calls which now originate in the Capital.

"Special Interests"

Before Pearl Harbor it was often a matter of private comment among observers that there were as many representatives of special interests in Washington as there are Senators and Congressmen, combined, on the Hill. The trade associations and similar units, representing specific industrial and commercial interests, had men and offices doing a sound and honest job of looking after those needs of their parts of the economy which the members of Congress had neither

the facilities nor the specific reason to undertake. In addition, there were numerous legal representatives who looked after legislative matters with propriety and had the good will of Washington. There also were the direct agents of specific firms and corporations who frankly and openly had business with Government. And beyond that there were Vice Presidents and Counsels, and other brass-plated functionaries of business units, who maintained suites at hotels, even entire floors in hotels, ostensibly for the convenience of other officials of the corporation who might visit Washington.

Lobbyists Are Charming People

Friends in Washington naturally in emergencies could obtain the use of these conveniences, and they were not unwelcome at the parties and gatherings which brought together many interesting and interested persons, with convivial trimmings, safeguarded from the intrusion of the curious. It was highly offensive to every one concerned to think even that the term "lobbying" and lobbyists had anything to do with these gentlemen—and ladies—of engaging and charming personalities, and their free and abundant hospitality. The Holiday season presented the joyous occasion for Christmas trees, laden with legitimate tokens of esteem, and providing the impulse that sent forth cases of inspirational goodwill, and boxes and packages and parcels which undoubtedly often made the eyes of the recipients bulge.

Those days apparently, however, were purely sophomoric, even adolescent, in comparison to the smooth and glassy sophistication which now prevails. We know, since Pearl Harbor, the number of these "representatives" of business and trade, and of other not so easily defined interests who have settled here permanently to maintain liaison with the Federal Government number over 2,500. Many have come openly and sincerely because they think there is no other way to do business intelligently, and they are absolutely right.

The complex and involved conditions, the intricate tangle of overlapping agencies, and the constant increase of regulations despite the end of the war; the shifting emphasis in the paramount issues before Government, as well as the abrupt rise and fall of the dominant power of those in authority; the sudden creation of new agencies or emergence into power of old agencies; the power of obscurely placed persons in Government to balk legitimate and urgent plans; the conflict of policies and the trends as reflected on the Hill and at the White House; the myriads of i's that must be dotted and t's that must be crossed to conform to the entirely legitimate formalism of Government which we call red tape; the perceived but usually unknown influences that writhe under the surface of the vast thing we call Government—all these and innumerable more components must either be understood or sensed in order to do business properly in Washington.

"Out of Sight, Out of Mind"

The time is gone when a person can drop into Washington with a number of presumably substantial introductions to a number of strong key people and expect to get results by visiting these key people and simply placing the problem before them. Literally tens of thousands of demands are made upon the attention and interest of Government officials. Those which are constantly kept fresh in their minds are the matters

which eventually receive attention. The others are allowed to be forgotten for the reason that it is assumed those concerned either have not sufficient reason to prosecute them or are not personally sufficiently important or forceful to see them through.

And, invariably, even when a matter actually goes into process of solution or validation, it must pass through "channels." Here is where conflicting interests have their opportunity to cause delays.

For example, sugar today is so tight that thousands of small bottling firms and bakeries and candy makers and jam preservers have been compelled to close their plants. Housewives have been warned they will not be permitted to have enough sugar to do their usual amount of holiday baking. Yet Congress passed a law recently permitting industrial alcohol plants, for the first time in a century, to use their facilities to make something else besides alcohol—sugar. These plants can make sugar out of corn without changing a screw in their equipment. The plants are not currently permitted to make alcohol because there is so much surplus alcohol that it could "float a fleet of battleships," according to Government experts. And there is said to be available enough soft and moist corn, approximately 1,000,000,000 bushels, which would make a gross total of 17,500,000 tons of corn sugar, equal to enough sugar over-all to supply our entire national requirements for at least three years.

More Corn Sugar

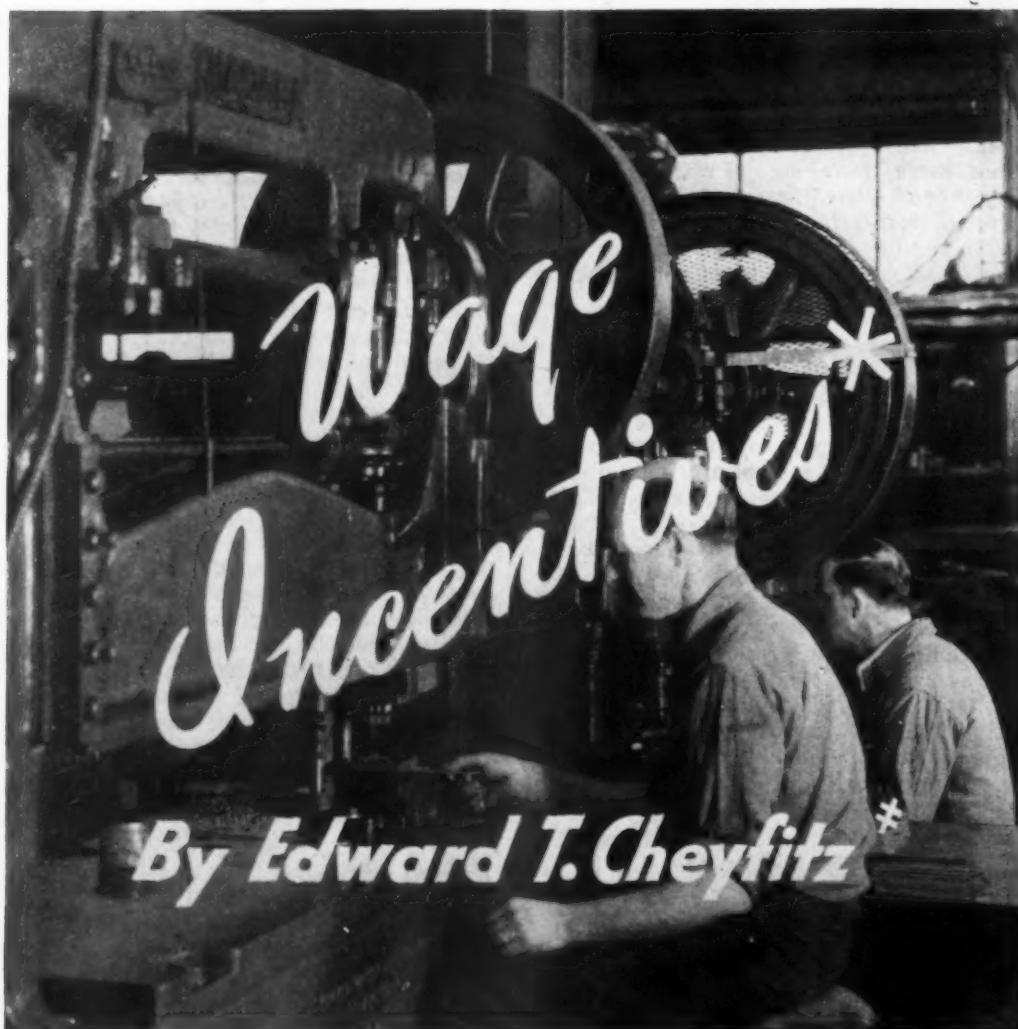
Obviously, a fraction of this volume of corn sugar, say a million or two million tons, would solve the problem which now is wrecking a large part of the minor units of a segment of the national economy. The situation was presumably placed before the Cabinet member having the power. He moved to start production of corn sugar. From him the initiative passed to the official specifically in charge of sugar affairs. It is easy to understand why the progress slowed down. On the sugar official converged the legitimate opposition by the sugar industry and the corn products industry. Both are complex and both have international facets. Also, along came the whiskey makers who want the corn to make beverage, and there were others who thought they had reason to feel apprehensive about the disturbance to their part of the national economy. Not the least of the opposition came from members of the Congress.

Opposition Is Organized

Let us presume the initiative passes farther down the line. It is quite easy to realize that the interests which do not want more sugar on the market from new sources and those who want to use the corn for other purposes will do their best to interpose obstacles. There is no real knowledgeable organized effort behind the attempt to get corn sugar at this writing; the chances are that unless this driving force appears which will "follow through," it will be a long time before the corn sugar is made in substantial quantities. The permission enabling the alcohol plants to make it expires on July 1.

Continuous and continuing representation is essential to those who have problems in Washington. The American railroads occupy an entire office building with their working force. There are dozens of other trade organizations which occupy smaller buildings. Most business associations have at least floors of office buildings. Eric Johnston and his Hollywood motion

(Continued on page 154)



THERE is a possibility of an economic or industrial civil war in this country. I think most of America wants to avoid it, but we cannot avoid that threatening industrial war unless we understand the labor-management problem—unless we understand all of its implications and attempt intelligently to settle and solve that problem.

A lot of people seem to think that if labor and management would only cooperate, just be men of good will, that would solve everything. Cooperation in itself never solved anything. You cannot cooperate around a vacuum; you have to cooperate around certain principles, so just to talk about cooperation settles nothing. Men can have a lot of good will but they won't solve the problem by good will alone.

Some people think that the solution to the labor-management problem is curbs, that what we need is legislation. Incidentally, the people who talk about curbs, especially those who want to curb labor, want less of government and everything else. They say, "Take government out of business; take government out of this and out of that; but put government into labor." On the other hand, those in labor who talk

about curbs on management say the same thing just the other way around—put a curb on everything but labor. You usually find that curbs are no solution to anything. At best they are negative. Curbs and cooperation are the two extremes.

It seems to me that the phrases that the average man throws around and that newspapers throw around about the labor problem get no place. What we need is a fundamental understanding of what is going on. I have some ideas on it, and I want to elaborate on them.

Unions are not a new phenomenon. A lot of people seem to think that the strikes in the Thirties or the battles of the Forties are new. You know the first strike in this country occurred just about the same time that we fought our Revolutionary War. The printers in Philadelphia in 1786 decided they wanted a six-dollar minimum wage per week, not an hourly wage. Ever since then there have been labor struggles, but the struggles were intermittent. Labor and management didn't clash very sharply until about 1870, when intense struggles took place; then there was the homestead strike; after that the great strike on the railroads; and then in 1919 the big steel strike.

These struggles had an economic basis, of course. Men wanted more of man's worldly goods. They wanted a greater share of the national income. But there was something else that man was struggling for in those days. These struggles did not become

*Address at Wage Incentive Conference, National Industrial Engineering Society, May, 1945, Northwestern University, Evanston, Ill. ‡National Member, C.I.O. Reconversion Committee.

sharp until the frontiers of America closed. Before that the man who wanted individual freedom, the man who wanted dignity, left the factory. But when the frontier started to close, that man had to stay in the factory to live. Then we found this struggle for individual freedom which is one of the driving forces in union organization. The point I am trying to make is that the union is the outgrowth of an expression by the individual of his drive for individual freedom. He wants, in the factory, what he gets in the community—recognition as a citizen.

Before unions came into most of America's plants, the worker would go in with no sense of dignity. The whim of a straw boss might mean the end of his job. What the worker wanted, primarily, was to be a man; he wanted self-expression; he wanted to have a personality; he wanted to have dignity. The union gave him that. And as long as the union continues to give him that, it is here to stay, because the union guarantees individual freedom in the factory. That is the motivation of the worker.

Profits, Production, and Freedom

What is the situation in the plant? All management has a primary motive for being in business—they desire to make a profit. If you cannot make a profit, there is no sense in being in business, and if you do not make a profit, you cannot stay in business. The way to make a profit today is by production. You have to have an ever-increasing productivity if you are going to perform your functions as an entrepreneur. Many an employer today feels that the drive for freedom on the part of the workers in the factory is a drive against production. And the worker often feels that management's drive for production is a drive against freedom in the plant.

It is possible to have both production and freedom. In fact, I think you can only have production with freedom. It is that basic principle that I think America is going to have to recognize: on the one hand individual freedom for the workers; on the other hand, production, ever-increasing production, with both sides—union and management—dedicated to that production. Both sides want individual freedom, and both sides want production. If we take that principle and apply it in any situation, it can become a compass in this wilderness of emotions and prejudices that exists today on our factory scene. I want to take that principle and apply it to this question of incentives.

First we talk about 60 million jobs. As you know, labor is dedicated to the proposition that full employment must become an American institution. If we do not get ever-increasing productivity, if we do not continue to hit new heights of production, 60 million jobs can become one giant WPA project, with a lowering of the standard of living of everyone. We cannot talk about 60 million jobs without considering and continuing to talk about increased productivity. Furthermore, the standard of living of the people, their purchasing power, rests upon the proposition of productivity, and if we want productivity, then incentives are necessary. Certainly incentives increase earnings. We find, in our own experience, the workers in those plants with incentives earn 30 to 40 per cent more than the workers who do not have an incentive. I think that much of the labor unrest in Detroit is due, primarily, to the fact that some union leaders—and I do not whitewash management here, because some management has undermined the labor situation—have kept the earning levels down, and

with prices rising have caused a great deal of unrest in Detroit.

When labor understands incentives it will be for the incentives necessary to get the productivity required for these 60 million jobs. The War Labor Board files indicate that in all the cases they have processed the workers who are on incentives are earning 35 per cent more than the workers who are not on incentives.

What about incentives in production? The War Labor Board, during 1944, received reports covering one million workers. This million workers had not been on incentives before. They went to incentives, and as a result of that program they increased production 40 per cent. That is a good sample. They increased production 40 per cent. If incentives increased production, incentives increased earnings. Then, what are labor's objections to incentives?

I think, basically, labor objects to incentives because of its past experience with them. It is the story of the horse and the oats: the workers feel you keep them trotting for the oats and you always keep the oats out of reach so the workers never get them. The worker feels that incentives are speed-ups, and that the rates are cut the moment the workers make a higher rate on it. He feels that incentives are used to burn out workers at an early age and throw them on the scrap heap.

There is a great misunderstanding on the part of the workers in the factory about time study, which is the basis of incentives. The average worker doesn't realize that time study is here to stay, that time study is a management tool. The average worker would not think of going down to the cost department and telling the plant comptroller they should get rid of him, or telling the cost accountant they should get rid of him.

The time study engineer is in a similar capacity to the cost accountant. The average worker does not realize that. He does not stop to think that you cannot get the cost of the product if you do not measure the time a worker puts in for the money he gets on that particular product or commodity. It seems to me that the industrial engineer and the plant management would do well if they got one concept across to the workers in the factory—that is, that the time study department is an essential part of modern business; that the time study department is here to stay; that the modern company could not exist without a time study department; and that the time study department has nothing to do with cheating the worker. The one way you can get that across to him is to separate, in his mind, time and money.

Accurate Work Standards Needed

What time study needs is an accurate work measure, the establishment of accurate work standards, and the separation of those standards from money. If management and the engineer will get across to the worker the concept that what he earns has an independent relation to how much work he does, as far as basic relationships are concerned, that would be beneficial. That may be old stuff to engineers, but I find that that is not in the language of the workers or of the union, and that the worker in the plant does not understand that there is a difference between time and money.

As far as labor is concerned my position, and I think also the position of the majority of labor leaders who are coming to understand time study, is that we do not want to abolish it. We are for it; we want

(Continued on page 81)

Check List of Relative Advantages

PARTNERSHIP

Income not subject to double tax when distributed.
 No penalty for retaining earnings in business.
 No excess profits tax, capital stock tax or declared value excess-profits tax.
 Reduced state taxes.
 Possibility of dividing income through formation of "family partnerships."
 Business loss deductible from personal income.
 Tax-exempt income and capital gains not converted to fully taxable, ordinary income on distribution.
 Partner's "salary" not subject to payroll taxes.
 Partner's "salary" not subject to salary stabilization.
 Possibility of eliminating all employees from payroll taxes, salary stabilization and WMC regulations.
 Lack of formalities in starting business.
 Freedom of expanding into other states.
 Profits distributable in any ratio. Need not be related to investment.

CORPORATION

Greater proportionate tax reduction in post-war period probable.
 Lower normal tax and surtax rates at present.
 Ease of obtaining new capital.
 Limited liability.
 Continuous existence.
 Ease of making gifts and transferring interests.
 Ability to split business up into several units.
 Special tax benefits for certain corporations engaged in foreign trade.
 Stockholder-employees receive payroll tax benefits.
 Stockholder-employees may be included in any pension or profit-sharing plan of the corporation.

Partnership or Corporation?*

[Part 3]

Advantages and
Disadvantages of
each method of
setting up your
business

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SINCE a corporation is a separate entity, dividends received from a corporation do not retain any of the characteristics of the income out of which the dividends were paid. The result is that as a conduit of profit the corporation has the effect of converting *all* types of income into fully taxable income when distributed as dividends. Thus, fully tax-exempt income, partially tax-exempt income, and capital gains and losses all become fully taxable ordinary income when the income is disbursed as dividends. The same end result is obtained where the corporate income is used to pay the salaries of stockholder-employees. The corporate income then, in effect, becomes fully taxable as salary to the stockholder-employees—regardless of whether it would otherwise have been tax-exempt in whole or in part.

Partnership income, on the other hand, does not lose any of its characteristics by going through the partnership. The income included in the return of the partner is identical with that received by the partnership. If the partnership realizes a capital gain, the partner's share of that gain is still considered a capital gain. If certain income received by the partnership is tax-exempt, a partner need pay no tax on his share of it.

Capital Gains and Losses

The differences between the tax treatment of capital gains and losses of corporate and noncorporate businesses are so small that they will rarely be a determining factor in choosing the form of business organization. In both cases, the excess of the net gains from the sale of capital assets held for *more* than six months, over the net loss from the sale of

capital assets held for six months *or less*, is subject to the same maximum effective rate of 25 per cent.

However, this maximum rate is arrived at by two different roads. The individual reduces his net long-term capital gains by 50 per cent and is subject to a maximum tax of 50 per cent on the balance. A corporation is limited to a straight 25 per cent of the net long-term capital gains over the net short-term capital losses. In most cases, the two methods lead to the same result. However, a different tax result to an individual and to a corporation *can* be obtained because the net short-term losses of an individual are offset in full against net long-term gains which have been reduced by half.

Suppose an individual and corporation each had a long-term capital gain of \$2,000 and a short-term capital loss of \$1,000. The individual would be subject to *no* capital gains tax, but the corporation would be subject to a tax of \$250. While this net result can vary as between a corporation and individual, the use of percentages by the individual will rarely make sufficient difference to influence the type of business organization to be adopted.

A more practical difference between the treatment of capital gains and losses for a corporation and an individual is the ability of the individual to deduct capital losses from other income up to a maximum of \$1,000. A corporation is denied this privilege. It can use capital losses only as an offset to capital gains. Both a partnership and a corporation can carry over unused capital losses for five years. Note that long-term capital gains and losses of a corporation are excluded in arriving at income subject to excess profits tax.

Personal Benefit from Losses

Another disadvantageous result of the treatment of the corporation as a separate body lies in the fact that if a corporation runs into hard years the corporate losses cannot be used to offset any other income which the stockholder may have. A corporate loss (except for the carry-over and carry-back provisions) is a tax waste. On the other hand, any losses by a partnership can be applied to reduce any other personal income of the partner.

Obviously, this distinction is important only where an individual has a source of income outside of his business. Where a business is the only income source, it makes little difference as far as the use of business losses is concerned whether it is incorporated or unincorporated. In either case, there is no other source of income to reduce.

Personal Dealings with Business

Transactions between an individual and his single proprietorship do not result in taxable gain or loss. However, if the same transaction is entered into with a fully-owned corporation, the gain will be taxable. (Any loss will not be deductible, since the loss is between related taxpayers.) The tax result where a partner deals with his partnership is not firmly established. One circuit court holds that the partner realizes no income, while another circuit holds to the contrary.

Social Security Taxes

Since a working stockholder is an employee, his salary is subject to the 1 per cent Old Age Benefit Tax plus the 3 per cent unemployment insurance tax. Thus, each stockholder-employee adds an annual payroll tax expense which can amount to \$150 (1 per cent O. A. B., 1 per cent withheld, 3 per cent unemployment insurance tax on the first \$3,000 of salary).

In small concerns, the fact that a stockholder is an employee may also result in imposing the 3 per cent unemployment insurance tax on all employees. For example, if a corporation has two stockholder-employees and seven other employees, the corporation would be covered by the state unemployment insurance tax (if the state coverage requires eight employees) and would be subject to the federal unemployment insurance tax of 3 per cent. Assuming operation in a state having a minimum requirement of eight employees for unemployment insurance coverage, the company (if all employees received over \$3,000) would have to pay \$810 a year unemployment insurance tax (3 per cent of \$27,000). If the same business were operated as a partnership, the business would be considered as having only seven employees and would not be subject to unemployment insurance tax. There would be an additional saving of 2 per cent (O. A. B. Tax) of the partner's "salary," or an additional \$120, a total saving of \$930 a year.

Payroll Tax Benefits

While a partner doesn't have to pay payroll taxes on any of his income, he forfeits the benefits which arise from those payments. These benefits are twofold:

1. *Unemployment Insurance.* Payments vary from state to state, amounts ranging from \$2 a week to a maximum of \$22 for a maximum of 24 weeks.

2. *Old-age Benefits.* In return for paying the 1 per cent Old Age Benefit tax, an employee is entitled to a lifetime annuity when he reaches 65, if

(a) At least \$50 was received in covered employ-

TOTAL TAXES PAID AS CORPORATION

		Taxes due
Federal income and excess profits taxes		
Income	\$50,000	
Excess profits credit	\$30,000	
Specific exemption	10,000	40,000
Subject to excess profits tax		\$10,000
Excess profits tax at 95%		\$ 9,500
Normal tax on \$40,000		8,900
Surtax on \$40,000		5,800
Federal income tax on stockholders		
Normal tax	\$ 264	
Surtax	1,750	
Federal income tax on each stockholder	\$ 2,014	
Total tax on both stockholders		4,028
New York State income tax on stockholders		
New York State income tax on each stockholder	\$ 157.50	
Total New York State income tax		315
Old Age Benefit tax paid by both officers (1% of \$3,000)		60
Payroll taxes of corporation (4% of \$6,000)		240
New York State franchise tax		3,000
Capital stock tax		750
Total tax		\$32,593

TOTAL TAXES PAID AS PARTNERSHIP

As a partnership, the business would show a net income before income taxes of \$73,990 arrived at as follows:

	Taxes due
Net income shown as corporation	\$50,000
Officers' salaries	20,000
Payroll taxes on officers' salary	240
New York State franchise tax	3,000
Capital stock tax	750
	\$73,990

New York State unincorporated business tax
The New York State unincorporated business tax on the above income would be \$ 2,359.60

New York State personal income tax
As a partnership, the income of \$73,990 would be divided equally between the two partners. Each would then be taxable on an income of \$36,995.

The New York State normal tax on that amount of income for a married person with two dependent children, and allowable deductions of \$700 would be \$1,544.74 each.

The total tax for both partners would be \$ 3,089.48

Federal income taxes
As a partnership, each partner would have to include in his income one-half of the partnership income of \$71,630.40 (\$73,990 less the New York State unincorporated business tax of \$2,359.60), or \$35,815.20. As a partnership, each partner's New York State income tax will be higher than as a stockholder. Since the New York State income tax is deductible in arriving at the federal income tax, each partner's deductions will be increased by the difference between his New York State tax as a stockholder (\$157.50) and his tax as a partner (\$1,544.74) or an approximate increase of \$1,387. The allowable deductions will therefore be \$700 plus \$1,387, or \$2,087.

The federal income tax for a married man with two dependents (wife with no income) on a taxable net income of \$33,728.20 (\$35,815.20 less \$2,087) is \$15,288.33.

The taxes for both partners would thus amount to \$30,576.66

The total taxes paid as a partnership would be \$36,025.74

ment in each quarter of the year, for at least (i) half of the quarters after 1936 and up to the quarter in which he became 65 (but not less than 6 quarters) or (ii) 40 quarters, and

(b) After that age he receives less than \$15 a month in covered employment.

He is entitled to supplementary payments if he has a wife over 65 or an unmarried dependent child under 18. In certain cases, an allowance is received for dependent parents. The monthly payments vary, de-

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NEWS SUMMARY OF THE MONTH

Community Building Ceilings

OPA regional administrators may authorize district directors to establish uniform dollar-and-cent community-wide ceiling prices on these goods.

In an action, effective November 5, 1945, OPA authorized regional administrators to re-delegate to district directors the job of fixing community ceilings on selected building materials. In two actions to be issued shortly, the authority will be made specific with respect to Douglas fir plywood and doors, stock mill-work, stock screen goods, mechanic or building equipment and some construction materials.

Installation charges also may receive community ceilings, OPA said.

Community dollar-and-cent ceilings will reflect the general level of prices under the applicable regulation—which may be “freeze” prices, or prices calculated by the seller under a formula provided in the regulation—OPA said. Community ceilings are determined only after a study of local conditions and selling prices, and do not change the existing level of costs to the consumer, OPA said.

(Amendment No. 1 to General Order No. 68—Regional Administrators—effective November 5, 1945.)

Amendment—Regulation W

THE Federal Reserve Bank recently issued a statement to Regulation W, effective October 15, exempting all repairs, alterations or improvements upon urban, suburban, or rural real property in connection with existing structures. This means that effective October 15 under the Federal Housing Administration Title 1 financing, terms to 36 months may be had without any down-payment on the following items: general building repairs including roofing and siding, heating equipment and plumbing, together with remodeling and other improvements.

Stoker Price Increased

IN AN ACTION effective November 8, 1945, manufacturers of household mechanical stokers (capacity 50 pounds or less per hour) were permitted a 10 per cent industry-wide increase over October 1, 1941, prices on household type stokers and a five per cent increase on larger sizes (up to a capacity of 1200 pounds per hour), and on-parts for such stokers.

Resellers (dealers) may pass on the dollar-and-cent amount of the increase, OPA said, when the stokers or parts are sold separately. However, if they are sold as a part of a larger unit (as a stoker would be part of a furnace sold equipped with stoker) the price increase must be absorbed by the manufacturer who sells the combination.

If any manufacturer has ceilings established under the mechanical building equipment regulation Maximum Price Regulation 591 that are higher than those

he would arrive at by applying to his October, 1941, prices the percentage increases allowed today, he may keep his established ceiling prices, OPA said.

If manufacturers maintain approximately their pre-war proportion of small to large sizes, the over-all industry price increase should amount to about 6.7 per cent, the increase needed to compensate for labor and materials cost increases since 1941, OPA said.

(Amendment No. 1 to Order No. 48 under Maximum Price Regulation No. 591—Specified Mechanical Building Equipment—effective November 8, 1945.)

No. 2 Pricing Method Revoked

THE special pricing method used by manufacturers of consumer durable goods who were forced to change their products because of wartime shortages of materials and parts was revoked November 5, 1945, by the OPA.

From now on, manufacturers who previously would have used this method—the second pricing method of the consumer durable goods regulation—will price instead under the third method.

The action also revises the third pricing method by directing manufacturers to figure their ceiling prices on the basis of *current costs* rather than March, 1942, costs.

So that these manufacturers may have all their business processed in one place, today's amendment permits them to file their reports under the third pricing method with their district offices as well. Manufacturers who price new articles on the basis of prices already set for comparable articles, may file their third pricing method reports with the field offices that priced the comparable items. A corollary action broadens the authority of district and regional offices to make it possible for them to issue pricing orders or to approve prices in these cases.

Under the revised third pricing method, a manufacturer figures the average mark-up allowed under the ceilings for two comparable articles and applies it to the current unit direct cost of the article to be priced. If the manufacturer's costs for the comparable article have legally risen since March, 1942, his mark-up will be smaller because his ceiling price has not changed. When this smaller mark-up is applied to the current cost of the new article, the final price is about the same as the price derived from a March, 1942, mark-up over March, 1942, cost.

A special order (Order No. 4332) under the regulation provided a simplified method of pricing for new small-volume manufacturers. This method may result in ceiling prices higher than the level set by the regulation, because it was worked out to aid beginners, especially veterans and war workers, often starting in business without enough capital to absorb heavy initial costs of operation.

(Amendment No. 69 to Maximum Price Regulation 188—Manufacturers' Maximum Prices for Specified Building Materials and Consumers' Goods Other Than Apparel—effective November 5, 1945.)

New Bank Credit Plan

A new credit plan for instalment buyers that ends the responsibility of store operators for their customers' credit standing is announced by the Buffalo Industrial Bank, Buffalo, N. Y.

Its "bankaway plan" provides that an individual establish his credit at the bank, and the bank will decide the amount of instalment buying he can do under the arrangement. He receives a credit card, renewable yearly, and a directory of participating stores.

The customer presents the card when he wishes to make a purchase and the merchant simply calls the bank for verification. He sells the customer's instalment contract to the bank. It then collects the instalments plus interest at bank financing rates.

Approximately 200 Buffalo area merchants participating in the plan include dealers in automobiles, electric and gas appliances, furniture, boats, motors, and airplanes, and home modernization and repair contractors.

Time Payments

UNDER Regulation W issued by the Federal Reserve System, time payment on heating equipment, insulation and other materials, articles and services in connection with repairs and alterations on urban, suburban or rural property, in connection with existing structures, was limited to 18 months' maximum maturity.

In accordance with an amendment issued September 28, 1945 by publication in the Federal Register, all restrictions on the length of time payments on real estate and on improvement loans will be cancelled effective October 15, 1945.

Effective October 15, the length of time payment paper which may be issued covering any extension of credit for the purpose of financing or refinancing,—

1. the construction or purchase of an entire residential building or other entire structure, or
2. repairs, alterations or improvements upon urban, suburban or rural real property in connection with existing structures, will be subject only to the finance company through which such paper is cleared.

Burner Price Increases

IN October, the OPA invited mid-west furnace manufacturers to a meeting in Chicago to discuss the manufacturers' request for a price increase. Nothing definite developed from the meeting. OPA did do this—explained that before an increase could be granted, in fact before an increase could be considered, it will be necessary for OPA to have from the industry a study of costs and production as compared with a "normal" year. This study can be obtained by getting a detailed report from every manufacturer. Or it can be obtained by taking a sample and projecting it. The latter was selected as most expeditious and the work is under way.

The manufacturers believe that a pretty substantial increase is necessary for two reasons. (1) To compensate for increased labor and material prices. (2) To permit manufacturers enough profit to increase their wages to labor in order to get labor from higher paying industries.

In view of this move, it may be of interest to see what OPA did for segments of the oil burner industry:

"Increases authorized by OPA in ceiling prices of controls and motors were put into effect by manufacturers at mid-October. Controls are up 5%; motors up 9%. Under existing general pricing regulations, these increases can be passed along in the price of an oil burner to a dealer. For some time studies have been under way to determine how much, if any, oil burner prices should be raised over the March 1942 base, to compensate higher labor and material costs. In September OPA sent auditors into the plants of a number of oil burner manufacturers to dig into books for cost facts. These men were to have their reports and recommendations in to Washington by about October 20. Nothing has yet been heard of this (Nov. 20) but in any event fairly prompt action is assured, with OPA anxious to get such matters settled, to prevent delays in reconversion due to price."

Ceiling Price Battle

OPA recently stirred up a storm of national proportions when the agency proposed a ceiling price on completed homes. Practically every organization in the construction industry protested the proposal. The question was brought out for battle when L-41 was killed in October—the battle has been going on since.

OPA believes that home building is one sure way to stimulate total business volume and employ a lot of people immediately. But OPA expresses concern that, if not ceilinged, prices will get out of hand because of the terrific demand and inflation will result.

The construction industry opposes the over-all ceiling and points out that costs of all building materials are already under ceilings. Labor costs are fairly well fixed by unions and there is not much can be done about them. The remaining question then is how to prevent the builder from adding unreasonable profits. This probably can't be done in many cases, but the construction industry contends that most of the public won't be sucker enough to pay much more than the house would have cost before the war.

In other words, the construction industry reasons that the public generally wants a \$6,000 house, and if the builder asks \$8,000 for the kind of house the prospect had in mind, not many will be bought.

One other factor that may have a deterring effect on overcharging is FHA's new policy of appraising the value of any house anytime anywhere and for anyone. If FHA insurance on a mortgage is sought, the applicant pays \$10 for an appraisal of the house's value. FHA will insure 90% on houses of \$6,000 or under. Above \$6,000, FHA will insure 90% of the first \$6,000 and 80% of the amount above that up to \$10,000. The important point to recognize is that this insurance is based upon FHA's appraisal and not upon the asking price for the house.

While many banks, particularly savings banks, plan to handle a similar type of mortgage without the FHA complications, they will nonetheless be closely guided by FHA's general appraisal policy. Thus, if the builder asks an exorbitant price for a house he will have to get a large down payment, which not too many people will be willing to furnish.

Opponents of OPA home pricing also claim that the actual job of getting Government experts to price all

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Tax Deductible Modernization

By Arthur Roberts

THIS is the postwar period we have been awaiting for years. Reconversion is under way and reconversion applies to every businessman, from textile mill operator to warm air heating dealer and sheet metal contractor. Many businessmen assume that reconversion is only a mechanical job, but it is necessary to adjust your thinking equipment as well as your physical properties. The reconversion program in this industry applies to property repairs, modernization of showroom and shop, equipment replacement, and the aggressive promotion of business plans held in abeyance during the war years for lack of manpower, materials, merchandise, and because of war restrictions.

The sooner the warm air heating dealer and sheet metal contractor get their PW (postwar) program under way, the better. Restrictions are being eased on all goods, so that producers of lighting equipment, machinery, office appliances, trucks, building materials for modernization or expansion, tools and showroom fixtures, will be offering their products to enterprising businessmen in a short time. Release of war workers should bring greater abundance of labor, so the longer you delay reconversion, the shorter your chances of getting a fair share of PW profits.

Time to Work Fast

The end of hostilities came fast, the government is working fast to get the nation back on a peacetime basis, and industry is following by working as fast as possible to re-tool for civilian production and to start their products moving through peacetime trade channels. The members of this industry must keep step with the movement and put reconversion first on the list of PW "musts." Businessmen who will earn the biggest PW profits will be those who shed the trappings of war as fast as possible, so give your whole business a face-lifting and turn on your "sellevision." Customers will appraise your business standards from now on by the rapidity and completeness with which you reconvert from war to peacetime operation.

Full employment is on the PW agenda, and this is a cooperative venture, requiring the assistance of all businessmen. Too many think of reconversion solely as a switch from wartime to peacetime production, but there is an equally big job to be done in the fields of distribution and sales promotion. Every businessman must reconvert every element of his business to the new way of life, so that our whole economy will function most efficiently and give maximum work to a maximum number of workers.

From our field experience, we find that the sudden stoppage of hostilities caught many businessmen, including members of this industry, unprepared. They

had not completed their PW plans and in some cases they had not even started to think reconversion, but they should have had some plan in mind just in case the unexpected happened. Some dealers and contractors, even now, are not giving thought to any phase of PW reconversion, letting things ride as they go along, hoping that the transition from war to peace will adjust itself as time goes on. PW reconversion won't take care of itself and it cannot be left to snap judgment, because it runs the gamut of operation, from financing PW business to equipment replacement and a survey of business possibilities for your products and services. It is almost like starting business anew. Any attempt to bridge the PW period with prewar equipment, wartime service, wartime substitutes or business policies, will get the snafu from PW buyers. So get your reconversion program under way as fast as possible.

Deferred Expense Deductible

Another angle to the problem is income taxation. Repairs and maintenance have been held in abeyance during the war because of manpower and materials control. This expense is deductible on the tax return, so the sooner the work gets under way, the better. The dealer or contractor should prepare a schedule covering this deferred expense and have the work completed as soon as possible. Likewise with inventories. Some businessmen may have considerable loss on inventory due to a heavy stock of war items or materials that now are more or less ersatz. If on hand at year's end, they should be listed at current value. If they cannot be written down in 1945, do so as soon as possible in 1946.

Modernization or expansion may provide tax benefits from losses on abandonment, losses incidental to the voluntary scrapping of equipment or removal of buildings or loss of useful value. When the business usefulness of an asset is terminated, the depreciated cost may be claimed as a loss if you can show that unforeseen circumstances were responsible for the premature discarding of the asset.

Depreciable Assets

For example, increased costs of maintaining a depreciable asset may be considered sufficient reason for abandonment, if the costs are out of line with income. If you experience a loss due to the voluntary removal of an old building or the scrapping of old equipment used in your business, and incidental to renewals or replacements, this may be deducted from gross income, but you must take depreciation into consideration when appraising the loss.

PW products may create loss of useful value. A prewar operating unit may be rendered obsolete by

a PW product radically different. If this compels a taxpayer to scrap an existing unit before it has been written off, he may get a deduction on his tax return for loss of useful value, because such deductions are allowed when, through some change in business conditions, the usefulness of a capital asset is suddenly terminated. For example, a PW machine or piece of equipment may turn out work so much faster and better than a prewar counterpart that the old unit, although mechanically satisfactory, and not fully depreciated on the books, may show a cost of operation so high that competitors using PW units may easily undersell the users of prewar units. In this case, these taxpayers may take a deduction for the unrecovered cost of the old equipment. Of course, such deductions are subject to the approval of the tax department, but the taxpayer is entitled to a tax benefit, if his case is consistent with regulations.

Although new buildings and new equipment are not deductible as an expense on your tax return, they may be deducted through depreciation, so the sooner you start modernizing or expanding, the sooner you can benefit by this expense deduction, pro-rated over the life of the old assets. In many cases, taxpayers have written off old equipment because they have been unable to buy new equipment during the war, and are no longer taking deductions for depreciation on the units written off. The replacement of old depreciable assets with new in such cases will revive this deduction, although the amount may differ, depending upon the cost of the new equipment.

Piecemeal Deductions

Incidentally, there is a demand for increased depreciation to induce new building and new equipment purchases, so, if Congress concurs, the dealer or contractor who makes such capital outlays, as soon as he can get the units needed may get the benefit of bigger deductions for depreciation until the assets are written off. If you depreciate an asset and take deduction for depreciation on your return, you are gradually getting credit for the investment therein, so that a capital expenditure is something like a deferred expense. The taxpayer takes his piecemeal deduction annually until the asset is written off, and in this connection, he cannot take credit for an outlay to replace an asset previously depreciated because he has already taken a tax deduction for the old asset through annual write-down. Hence, the new unit goes on the books as a capital outlay, to be similarly written off over its life by annual deductions for depreciation.

Cheyfitz— Wage Incentives

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to perfect it. But in perfecting it, it seems to me we have to do several things. First, the engineers have a responsibility to perfect the mechanism of accurate work measurement, to get standards, to establish what is normal, how fast is fast, and to make sure that the incentive is based upon accurate work measurement, with proper work therefore.

The second thing is that the industrial engineers have to democratize and humanize incentive in management. If we recognize that, we can do things with it. What does that mean? I started out to describe an environment in the factory. I said that

Repairs and maintenance work held in abeyance during the war years should be gotten under way as soon as possible. Any outlay needed to keep a depreciable asset in efficient operating condition may be deducted as repair expense, provided it does not increase the value of the property. If the outlay is an improvement, it is not deductible as an expense on the tax return. In some cases the cost of replacements in the nature of repairs, where a property has a short life, is charged to expense. Often there is a fine line between repairs, which are deductible, and capital expenditures, which are not deductible. The best general rule to follow is that if logical argument will support an outlay as a legitimate expense, regard it as such. Some dealers and contractors, to "sweeten" their financial statements, consider all repairs as capital expenditures and forego a legitimate deduction on the tax return. This is unwise because it waters the profit and loss statement as well as the net worth and eventually this water must be squeezed out and written off. At that time, it is too late to take a tax credit for the deduction.

Two Kinds of Obsolescence

Obsolescence will be a factor in reconversion too. There are two kinds of obsolescence, normal and forced, the former deductible annually with depreciation, the latter brought about by radical changes or other economic upheavals. The PW period may be considered a radical departure from what has gone before and forced obsolescence is inherent in it. Until it becomes apparent, forced obsolescence will not be allowed as a tax deduction, but now is the time that it may become apparent to many businessmen. If you have a depreciable asset that has its usefulness reduced because of PW developments of any kind, you may be allowed a deduction for forced obsolescence, which is obtainable by increasing the annual depreciation deduction to take care of this unusual expense. In this way, you recover the remaining cost on your books over the shorter life of the asset. If circumstances make it necessary to replace an asset at once before it has been written off, and any loss resulting therefrom is due to a condition that could not possibly have been foreseen when the depreciation rate was set originally, it is probable that the write-off may be deducted as a loss of useful value in the year the loss occurs.

Prompt reconversion will increase your sales, lower your taxes and other costs. You won't strike real pay dirt until you reconvert.

there is a great deal of tension in many plants, and that I think tension is misunderstanding on the part of labor, which is for individual freedom, and on the part of management, which is for production. I think that the industrial engineer, the representative of management, has to take time studies and any other management technique and make them fit into this framework of individual human rights in the factory.

If you want labor peace in the factory, all of management's methods that affect labor must be explained to them and labor must participate in them. That is the final point I want to make, that you can administer the plant, and you should. Copilots don't both run an airplane. One pilot runs it at a time. Labor and management cannot run the factory; management has to run the factory. As long as you own it, you run it, but that doesn't mean you must have an arbitrary policy.

Postwar Budgets and Taxes*

"NO ONE in this generation will see more than a slight decrease in federal tax rates and federal tax burdens." Forecasts along this line have been made and are likely to be made more often, in and out of Washington.

The key to the future of federal taxation is, of course, the federal expenditures. There is no necessity or compulsion confronting the country that foreordains any particular level of those expenditures after the war. If they are allowed to rise to a level that will require back-breaking taxes, this outcome will only result because the people, by and large, are so indifferent as to permit liberal expenditures and heavy taxes rather than to insist upon prudent spending and low or moderate taxes.

With respect to the federal expenditures, there is only one item that is so definitely fixed as to be inflexible. This is the interest on the public debt. Supposing that the debt should rise to a point somewhere above \$300 billion and that the annual interest charge will then be \$6-\$7 billion, this interest requirement can be regarded in either of two ways. It can stand as a warning and a caution that other federal expenditures should be kept within strict bounds, or it can become the basis of a pessimistic conclusion that a high total is inevitable simply because of such a heavy annual payment for interest. That is the debt service cost can lead to the slogan "We must be vigilant," or to the lament, "What's the use!"

Aside from interest, there is no other item in the budget which is fixed and unchangeable. There are some services which must be performed, such as defense, the administration of justice and the preservation of law and order. But even for these essential services the amount that shall be spent is subject to variation within a considerable range.

Such being the case, it becomes of interest to make some guesses about the budget in order to see what is involved if the total is to rise to a level which will mean comparatively little tax relief. For this purpose some hypothetical budgets will be suggested. The first assumption is that the total federal expenditure will be \$15 billion as follows:

A Hypothetical \$15 Billion Federal Budget

Purposes	Amount in Billions
Interest on the public debt.....	\$ 6.5
The defense establishment.....	3.5
The care of veterans.....	1.5
Welfare grants to states.....	0.5
Independent offices and agencies.....	1.0
Civil departments and miscellaneous.....	1.0
Subtotal	\$14.0
Available for debt reduction or other purposes	1.0
Total	\$15.0

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The amounts set down here are assumptions, not predictions. Nevertheless, they are not wholly wild guesses, for they have been arrived at by consideration of certain pertinent data.

Postwar Costs Unpredictable

For example, the cost of the postwar defense establishment cannot be accurately projected, for the ultimate size of the armed forces has not yet been determined by law, nor has a policy been developed with respect to its disposition at home and abroad. For the fiscal year 1944 the war activities, exclusive of lend-lease costs, involved expenditures of \$75.4 billion, or an average of about \$7,000 per man in the armed forces. Assuming that the cost per man in training and in garrison duty will be half as much as the cost per man under active combat conditions, the total required to maintain a personnel of 1,000,000 would be \$3.5 billion.

The cost of veterans' care should be distinguished from that of the schemes for their rehabilitation and re-induction into civilian life. The latter type of cost will be high for a time but it should not endure for long. The boys whose educational career was interrupted will not stay in school or college very long even if their bills are being paid. Some will not want to resume their studies at all. Those who are to start in business, with the help of a loan, will not require, or at any rate should not get, an indefinite series of such loans to keep afloat. For the long pull, the cost of veterans' care that really needs to be set up in the postwar federal budget program is that for the sick, the disabled and their dependents. On the basis of previous experience with costs of this type, the amount required may not exceed \$1 billion at first, but it will probably rise to as much as \$2 billion within a decade. An annual average figure of \$1.5 billion is suggested. It should also be said that if there are to be occasional large payments such as the adjusted compensation settlement of 1936, such transactions will no doubt require funding and will be reflected in the current budget by an increase of the interest charge.

Back to 1940 Level?

The amount that is allowed for the civil departments in the above assumption would require a cut-back to about the level of 1940, when the total approximated \$800,000,000.

Suppose, now, that the budget is allowed to rise to \$20 billion. This increase would not be caused, obviously, by any large change in the item of interest. It would be the result of a) general slackness in spending controls all along the line, or b) the introduction of additional purposes of expenditure, or c) both of these influences together. The breakdown of such a budget might be as follows:

A Hypothetical \$20 Billion Federal Budget

Purposes	Amount in Billions
Interest on the public debt.....	\$ 6.5
Defense establishment.....	5.0
The care of veterans.....	2.0
Welfare grants to states.....	0.7
Independent offices and agencies.....	1.3
Civil and miscellaneous.....	1.5
Public works.....	1.0
Aids to agriculture.....	1.0
Educational grants to states.....	0.5
Subtotal	\$19.5
Available for other purposes.....	0.5
Total	\$20.0

The Expansion Process

The expansion process is illustrated here by more liberal provision for certain services than would have been made in a smaller total budget, and by the introduction of new purposes of expenditure. None of the latter can be regarded as necessary public services, in the same sense that interest, national defense and the preservation of law and order can be so designated. All of them are, of course, necessary in the eyes of the sections or groups to be benefited thereby.

As a final step in this series of assumptions, let it be supposed that the total would be as high as \$25 billion, a figure which has been used by some who have ventured an opinion on the subject of the postwar budget. In order to lift the foregoing hypothetical budget by another \$5 billion it becomes necessary to scatter the money about in every direction.

A Hypothetical \$25 Billion Budget

Purposes	Amount in Billions
Interest on the public debt.....	\$6.5
The defense establishment.....	6.0
The care of veterans.....	2.0
Welfare grants to states.....	1.0
Independent offices and agencies.....	1.5
Civil and miscellaneous.....	1.5
Public works (including super-highways)...	2.0
Aids to agriculture.....	1.0
Educational grants to states.....	0.5
Broadened social security benefits.....	1.0
Airports and other aids to transport.....	1.0
Foreign lend-lease, etc.....	1.0
Total	\$25.0

The purpose of these hypothetical exhibits is to indicate that a range of choices exists, if the people are sufficiently alert and sufficiently informed about them to make the required decisions. All of the services listed above have been mentioned, at one time or another, for inclusion in the federal budget. Many of them are purely optional, both as to inclusion as such and as to the amount that it would be proper to spend on them.

Budgets in Terms of Taxation

It may help in visualizing what various budget levels mean in terms of taxation to refer to the federal tax collections of recent years. These yields are presented herewith, together with the Department of Commerce estimates of the income payments from which the taxes were drawn.

On the basis of recent experience, it would appear that with income payments at the 1943 level, of say

Income Payments and Federal Tax Collections, Fiscal Years 1942-1944

Items	Millions	1942	1943	1944
Income Payments to				
Individuals ¹	\$92,700	\$116,600	\$142,300	
Federal Tax Collections				
Income Tax				
Individuals	\$ 3,263	\$ 6,630	\$ 18,261	
Corporations	3,069	4,521	5,284	
Excess Profits Taxes ²	1,675	5,148	9,483	
Capital Stock Tax....	282	329	381	
Estate and Gift Taxes..	433	447	511	
Excise Taxes	3,123	3,795	4,461	
Total Internal				
Revenue ³	\$11,845	\$ 20,870	\$ 38,381	
Customs	389	324	431	
Total Tax				
Collections	\$12,234	\$ 21,194	\$ 38,812	

1. Income payments for calendar years 1941, 1942 and 1943, respectively.
2. Includes declared value excess profits tax and unjust enrichment tax, both of minor revenue importance.
3. The employment taxes are excluded from these totals.

\$140 billion in round figures, it would require only about two-thirds of the amount actually collected in the fiscal year 1944 to support a \$25 billion budget. If income payments after the war were to recede to about the 1942 level, say \$120 billion in round figures, it would be possible to support a budget of \$20 billion by levying approximately the tax rates that were operative for the fiscal year 1943. On this national income basis, further tax reduction would depend upon keeping the budget below \$20 billion. If the income payments were to decline to the 1941 level, the tax rates applicable for the fiscal year 1942 would not supply enough to cover even a \$15 billion budget. Finally, it is evident that if the national income payments should be at or near the 1943 level, that is some \$140 billion, it would be possible to finance a budget of \$20 billion and at the same time have material tax reductions below the tax rates applicable to 1943 and 1944.

National Income Unknown Factor

There is, thus, an unknown factor in the choices which the people are entitled to make about spending and taxing, and which they will make, either directly or by default. *This unknown is the volume of the national income.* If it is to be high, there can be more liberal spending and at the same time lower tax rates. Even more important is the question whether the national income is to be a certain amount by virtue of the normal, healthful functioning of the economy or is to be inflated to some pre-determined level by the strong-arm methods of deficit finance.

This matter of national income is a result of the volume of production and the price level. The best way of establishing and holding it at a high level is to have vigorous economic activity, large employment, good wages and substantial output of goods. Since taxation affects so profoundly the incentives and motives of individuals in deciding whether or not to engage in economic effort, it would appear fundamental that tax rates be reduced and that such tax adjustments be made as will release rather than restrain economic activity.

The illustrative budgets given above are conjectural,

(Continued on page 113)

Peacetime Job and Wage Problem

WHY are there large numbers of workers seeking employment when there are also large numbers of job openings?

Seeking an answer to this important reconversion question, the United States Employment Service, of the Department of Labor and the Social Security Board, Federal Security Agency, sent teams of investigators from Washington to three typical American cities. Chosen for the study were Atlanta, Ga., Columbus, Ohio, and Trenton, N. J. In each, officials had noted, unemployment compensation claims and listed job openings had remained at consistently high levels after the crest of post-VJ-Day layoffs had passed.

The two agencies now announce the results of what had become essentially a study of war workers in a peace-time economy. The study confirmed what was already suspected:

(1) That the labor market had been inflated during the war by the inclusion of many workers who had learned only a single skill.

(2) That there were few, if any, peace-time jobs calling for these limited skills.

(3) That there has been a sharp reduction in the number of jobs available in the skilled categories.

(4) That lower-skilled jobs pay smaller wages and workers' incomes have been further reduced by the return to the 40-hour week; if all the claimants in the three cities matched job openings and could be re-employed on the jobs, they would receive a cut in take-home pay averaging from 34 to 49 per cent for men and from 49 to 53 per cent for women.

(5) Most of the available jobs were for men only, most of the job seekers were women.

Women represented 60 per cent of the total claimants in Atlanta, 69 per cent in Trenton and 77 per cent in Columbus. Of the job openings, from 60 to 81 per cent specified "men only," while 40 per cent of the women claimants had been housewives or had had no work experience before the war. But more of the women claimants had been employed in a skilled or semi-skilled job before the war than there were openings for them in the present market.

Although the studies were limited to unemployment compensation claimants and job openings listed in local USES offices, the conclusions were found to be representative of the labor market conditions in each of the communities since the survey also revealed that the types of jobs offered through the USES represented typical cross-sections of current employment opportunities.

Large numbers of workers are accepting jobs, notwithstanding the wage and sex limitations. This was reflected in the high rate of turnover of unemployment compensation claimants during 8-week period following VJ-Day. In each of the three cities, slightly over 40 per cent of the persons filing claims discontinued their claims. Only 26 per cent in Columbus and 7 per cent in Atlanta stopped reporting because of ineligibility or disqualification. Of the eligible claim-

ants 77 per cent in Atlanta and 53 per cent in Columbus discontinued their claims before drawing any benefits.

The disparity between skills and job openings was clearly demonstrated. For women, clerical, sales and service jobs constituted from 40 to 61 per cent of all jobs open to them, yet only 15 to 18 per cent of the women claimants had last worked in these fields. Jobs requiring high skills were all but closed to women claimants in Atlanta although almost a fourth of them had last worked on a skilled job.

Men were similarly situated. Although more than half of the Atlanta men claimants had worked on a skilled job, only 15 per cent of the openings called for skilled workers. Only two per cent of their number had last been employed on an unskilled job, yet 59 per cent of the job openings for men were classified as unskilled. Much the same situation was found to exist in Columbus and Trenton.

Comparisons of present job openings with the pre-war jobs of the claimants showed a somewhat different relationship. Forty-nine per cent of the Atlanta men had worked in a skilled or semi-skilled capacity before the war, but only 30 per cent of the present jobs called for those skills. Indeed, 59 per cent of the jobs open to men were in unskilled occupations whereas only 11 per cent of the men claimants had worked in these occupations before Pearl Harbor and an additional 3 per cent had not worked at all before the war.

More than half the Atlanta men earned more than \$50 a week on their latest jobs, but such wages can be earned on only 12 per cent of the jobs open in Atlanta at the time of the survey. No jobs open to women in Atlanta paid as much as \$45 per week, although 70 per cent of the women claimants had at least earned this much. Half the jobs listed for women in Atlanta pay \$20 to \$29 per week, and an additional 41 per cent less than \$20.

More than 60 per cent of the Trenton men earned \$60 a week or more on their last jobs but 95 per cent of the available jobs pay less than this amount and two out of three pay less than \$40. A majority of the Trenton women claimants had earned \$55 a week or more, but less than 1 per cent of the jobs open to them offered such pay.

In Columbus, the majority of male claimants had recent earnings of \$55 or more, but now only 7 per cent of the jobs pay this much. And no jobs open only to women offer as much as \$40 a week, although three-fourths of the Columbus women had last earned \$40 a week or more.

Although some of the disparities cited above are due to a reduction in the work week from 48 to 40 hours, such a reduction in hours results in only a 23 per cent reduction in weekly earnings. Actually the average hourly wage rates on open jobs were 37 to 48 per cent below wage rates last earned by the men and 43 to 52 per cent below wage rates last earned by the women.

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Fig. 2—The burner employed in this space-saving model uses not more than one-half gallon of furnace oil per hour to develop a furnace rating of 50,000 Btu.

The Future of Oil Heating

By A. E. Hess

Managing Director, Oil-Heat Institute of America

THE advent of war in 1941 interrupted a trend in the field of heating which was most advantageous for forced warm air with automatic control. There was a clear indication that home owners favored the several good features of such a system. With the conclusion of the war and new home building and modernizations in prospect will the trend continue? Is the oil heating industry planning on it? The answer is a positive, Yes. Their plan covers the fields of central heating plants and space heating.

Before the war 65% of all the one family houses which had central heating systems were heated with warm air. Furthermore, and showing the trend, 70% of heating equipment sales were in the warm air line. The postwar years will result in not less than 400,000 new homes in each of the first five years and the indication is a market for 280,000 central warm air heating jobs with 65% of these buying automatic heat. That's the new home market for central systems which the oil burning equipment manufacturer sees and he is, also, not forgetting the additional possibilities in present homes which will be brought up-to-date with modern automatic warm air heating systems and oil burners. It is estimated that 13% of all the heating systems now installed are in need of replacement and a recently completed

survey indicates that nearly 50% of experienced home owners prefer warm air as the heating medium after experience with the three types.

Home owners have always liked the rapid response from a warm air furnace when heat was needed. Oil has been an aid in that direction and in addition, with automatic control, made it possible to discontinue heat, when the demand was satisfied, almost instantaneously. The homes of America have thousands of oil heating installations in central furnaces which have been operating for more than ten years and many of these were enjoyed long in advance of the improvements which resulted from forced air. Not only were they entirely practical from a comfort standpoint but they were eminently satisfactory in cost of operation. With upwards of twenty-five years of good experience in the warm air heating field the manufacturers of oil heating equipment are now planning to go after their portion of the postwar market in active cooperation with the better heating contractors. Together they will offer new and modern furnaces which are complete with burners and controls designed to produce still more efficient results than formerly.

An objection to the warm air furnace of the past, particularly the gravity furnace, has been the space

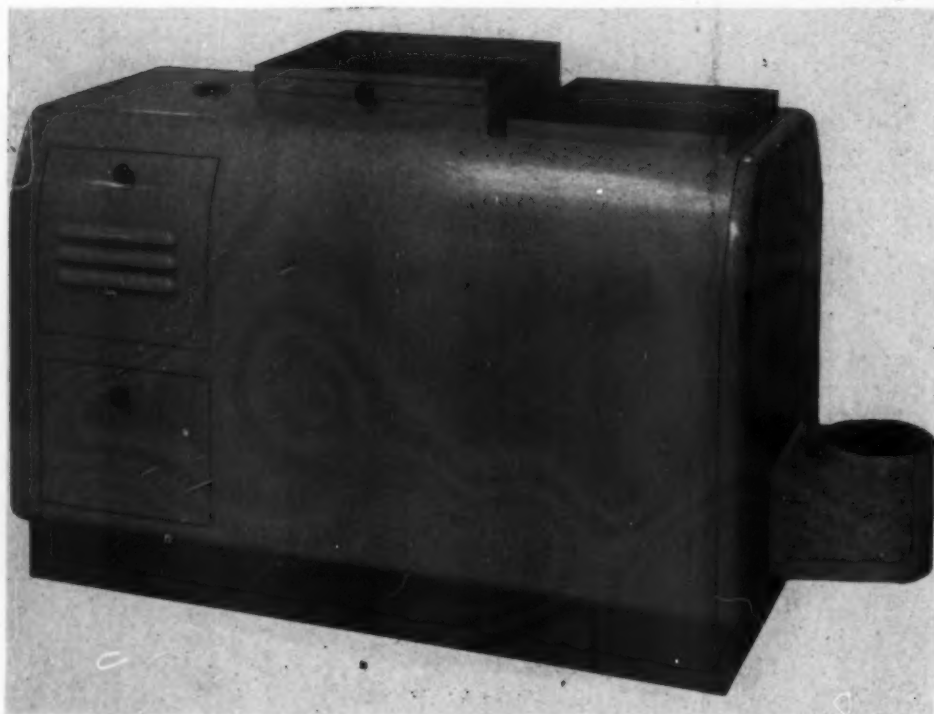


Fig. 1—Efficiency of heat transfer aided in reducing size of this forced air unit. Dimensions are 21x27x44 inches. Rated at 55,000 Btu.

which it took when installed. The gain in floor space resulting from the elimination of radiators was cancelled, to some degree, by loss of other space. Makers of the furnaces were reducing the size of units before the war and new lines will reflect further progress in overcoming the criticism. The efficiency of heat transfer will be better and has aided in reducing size. See Figure 1. Special burners have been designed and the application of burners has been improved. Furnaces have been designed so that every square inch of metal which can transfer heat is scrubbed by moving air and in some cases that includes the first section of the smoke pipe. Another aid in the matter of size is the fact that about 87% of the postwar houses will be insulated and smaller central furnaces will heat larger homes in future. Before the war a manufacturer commonly started his line with a 100,000 Btu furnace. Postwar, central heating plants of 50,000 and 75,000 Btu will be common. Installation costs will reflect the change favorably.

Figure 2 is an illustration of one of the new postwar models. It's not only a space saver but is reported to be one of the most efficient oil units ever designed. The manufacturer has designed the air flow to scrub the under side of the hearth where the oil fire is originated. The burner employed is very quiet in operation and uses not more than one-half gallon of furnace oil per hour to develop a furnace rating of 50,000 Btu. The operating cost and the installed cost will be attractive to the small home owner who previously may not have expected to enjoy automatic oil heat with forced warm air with basement installation.

These illustrations are but two of many of the new models, including utility room units, which heating contractors will shortly be delivering to a hungry postwar market. In delivering them they will soon observe that some of the problems previously encountered in the installation have received attention from the manufacturers. With labor costs up, time for installation had to come down.

Complementing the central heating plants are the oil fired space heaters. There are thousands of these units in use now and many more thousands will be sold. There is a story of satisfaction behind them which guarantees that. Also, like the central plants, they can be made automatic in operation and they can have thermostatic control.

Whether prospective buyers choose an oil fired central plant or an oil burning space heater depends upon a number of conditions. Among these are the size of the space to be heated, the geographic location of the house, the fortunes of the family purchasing the unit, personal prejudices and climatic conditions. Also, the basementless house is gaining in popularity and the number of such houses projected and being built is increasing rapidly.

Built of better materials, fully insulated, the new small homes of 4, 5 and 6 rooms will require comparatively low heat input because of low heat loss. Many will need as little as 40,000 to 60,000 Btu per hour. Some will require only 30,000 and 70,000 Btu per hour can represent a large house. For these smallest homes thermostatic control is frequently added so that heating is automatic in the lowest cost unit. An automatically operated fan sends humidified air to the several rooms. Radiant panel doors on the sides of the heaters give spot heat when needed.

The fuel economy of some of these oil burning space heaters is truly remarkable and has contributed much to their popularity. Heaters equipped with mechanical draft vaporizing burners and synchronized control of oil and air burn with the highest efficiencies at all fire stages from high to low. The resulting low cost heat meets the small home owners need and demand.

These heaters, or their counter-parts, the floor furnaces and utility room models, readily lend themselves to disposition in many locations within the house. Typical heater locations in a small home are shown in the composite drawing Figure 3.

The cabinet type space heater (A) is a very compact unit which is designed to take a finish which makes it another pleasing piece of household furniture. It is very quiet in operation and furnishes radiant as well as circulated heat. It is the most popular and most readily installed of the several models of space heaters. Other features include fuel saving mechanical draft, synchronized oil and air control, thermostatic control and humidification. Manual control may be employed if desired.

The floor furnace (B) in Figure 3 combines the simplicity of the space heater with the out-of-the-way convenience of a basement furnace. This unit is designed as a central heating plant without duct work. Normally, it is suspended from the floor of the house and a floor grille is the only visible part of the unit in the living quarters. Forced air circulation is provided together with thermostatic control. All parts are accessible by lifting the floor grille.

The utility room furnace (C) in Figure 3 employs a short system of duct work to deliver warm air to the rooms and to draw the return cold air, through underfloor ducts, back to the heater. The burning unit is very similar to that used in the space heaters and operates in the same manner. With humidification and an air filter this unit furnishes complete winter air conditioning with fully automatic controls.

Units of these three types taken together with the central heating systems make a complete line of oil fired warm air heaters and some unit in the line is adaptable to any sized home the contractor may have to heat. The range of capacities is wholly adequate and the cost of installation on all is properly in line with the allowances for heating systems in the plans of the homes. Insofar as the planning of automatic oil fired warm air systems is concerned the needs of the new home owners have been considered and can

be met. The whole range of American homes has been covered and the ability of the manufacturers to meet the needs is now limited only by a present temporary shortage of materials at most plants and a shortage of labor at some. These limitations will soon be overcome and it is expected that before the start of another heating season deliveries can be prompt on warm air units of all types and sizes.

Home planners are interested in the economy and flexibility of oil as a fuel. The Institute receives, each week, a few inquiries about the quantity of oil which is now available and how long, in terms of years, oil may be contemplated for use in home heating. Obviously the writers are earnest in their desire to use oil but they have read some of the articles which appeared in various publications during the war years which were designed to encourage conservation of the heating oils this country was assigned from the world oil pool. To assure them on the future of oil heating it is only necessary to quote from the statements of recognized authorities on supply and to point out the fact that at no time during the war was there an actual shortage of fuel oil. Transportation was the shortage and there were times when the oil, which was available, couldn't always be gotten to the point where it was needed in the total quantity needed. That situation was remedied in less than thirty days after the war ended and home owners have not failed to note that fuel oil was one of the first commodities to be removed from rationing. No shortage developed after the elimination of rationing and none will because productive facilities are both increased and improved. Oil is easy and the law of supply and demand is favorably at work on this commodity. Therein lies the best proof that fuel oil will be the economical automatic fuel for homes, both large and small, for long years to come.

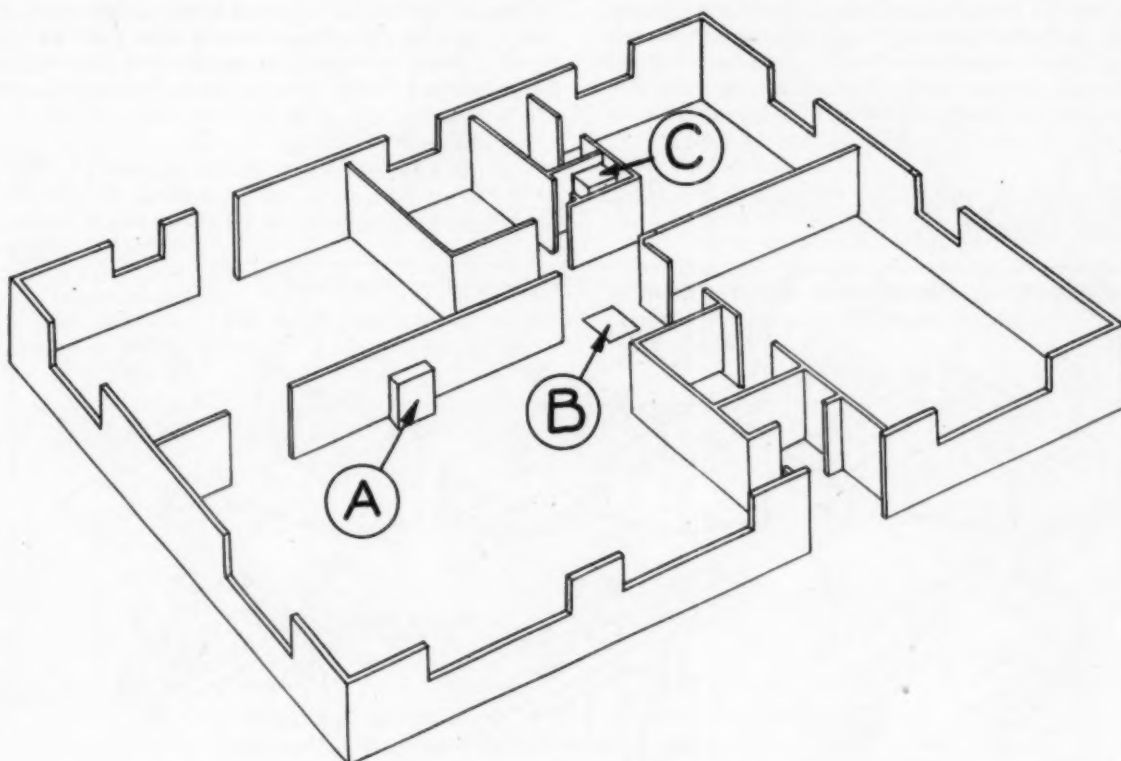


Fig. 3—Typical heater locations in a small home.



The "How, What and Why" of the New Winter Air Conditioning Manual

BY
S. KONZO*

HOW TO USE IT
WHAT RESEARCH BACKS IT UP
WHY EVERYBODY SHOULD ADOPT IT

"Equivalent" Length of Fittings

YOU Can't Push Air Through a Pinhole—at least not to amount to anything! For sake of explanation let's consider the flow of water in the plumbing system in your house. When you open the valve in the bathtub, water flows. The wider you open the valve, the greater is the quantity of water. There is pressure behind it. Now that water has passed through a branch main, of say $\frac{1}{2}$ in. diameter. Perhaps the branch was tapped off from a $\frac{3}{4}$ in. main leading into the house. If you went out to the street you may find the street main may be, say 2 in. in diameter. Further on down the line you may find a 6 in. main, until finally at the pumping station you may find a real he-man sized main. The important thing to remember is that the amount of water that you can possibly get out of that bathtub valve is dependent upon just two things:

- The water pressure at the pumping station, and
- The resistance of the entire water system from the pumping station to your bathtub valve.

In other words, every foot of pipe between the pumping station to the bathtub, and every fitting in between the two points, determines whether you get a good husky flow or a mere trickle. If I asked you why this is so, you would probably answer: "Friction cuts down the flow."

*Special Research Professor, Engineering Experiment Station, University of Illinois.

That is correct, but have you ever considered what we would have if there were no such thing as friction in water flow? If water, or any other fluid, could pass through a pipe without any friction we would have:

- The pressure behind your bathtub valve would be exactly the same as that at the pumping station, say three miles away.
- It wouldn't make any difference whether you had a $\frac{1}{4}$ in. pipe or a 10 in. pipe for the mains; both would deluge you with water.
- We would get either a deluge or no water at all. If there were no friction you could not "throttle" water with a valve. The moment you cracked the valve seat your bathroom would be flooded.

Now, this fantastic example is cited only to impress upon you some rather fundamental ideas that are common to air flow, as well as to water flow.

- The quantity of air (or water) that you will get at the end of a branch run is going to depend upon the resistance of the pipe starting from the blower (or pumping station) to the register (or water valve). Every foot of pipe and every fitting in the path between the two points introduces a resistance.
- Resistance to flow of air (or water) is a significant item. It is not negligible. It's a good thing we have resistance, or there would be no means

GROUP I. Warm-Air Bonnet and Return-Air Plenum

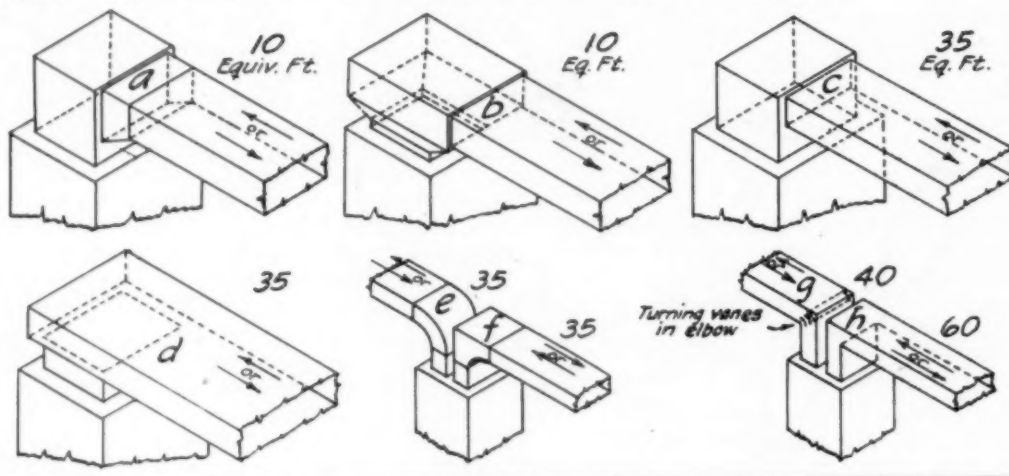


Fig. A

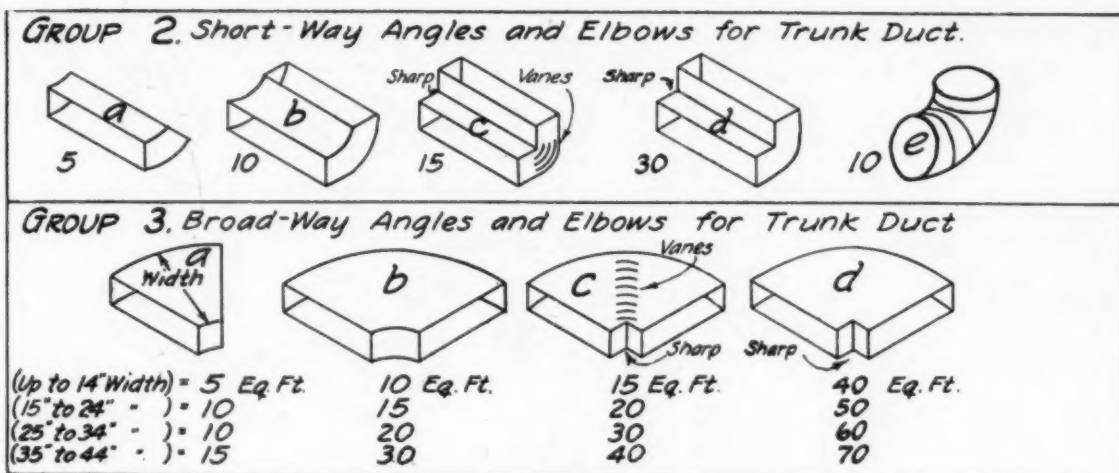


Fig. B

of controlling fluid flow, assuming we could get it to flow in the first place.

What Makes a High Resistor?

Have you ever driven a car along a highway in which each curve in the road was indicated by a road sign that told you the maximum safe speed for which the curve was designed? One curve with a sharp, right-angled turn is labelled 15 miles per hour, and another with a rounded-bank turn shows 60 miles per hour. Streamlining does the trick, of course. But have you ever stopped to consider what happens to your car when you came to a curve in the road? Suppose you are cruising at 50, and suddenly came to a sharp curve? You jam on the brakes; the energy of the car is absorbed by the brake linings; the car velocity is reduced. After you make the turn, you gun your engine and pick up speed at the expense of gasoline energy. If the curve were streamlined you could take it at cruising speed—no energy loss in slowing down the car—and no extra gasoline energy to pick up speed again.

Each particle, or molecule, of air flowing through a duct can be likened to a miniature automobile. If you provide a series of sharp turns, is it any wonder that the air flow is not as ample as in the same sized duct having streamlined turns and fittings?

To make a long example short, the resistance to air flow will increase with:

- higher velocity. (The resistance goes up as the square of the velocity.)

- sharper bends.
- smaller ducts, which give higher velocity.
- rougher duct surfaces, whether that roughness is due to non-smooth walls, or to the presence of protruding joints.

What is an Equivalent Length of a Fitting?

The Manual (Textbook No. 7 of the National Warm Air Heating and Air Conditioning Association) brings to your attention the relative values of resistance of a number of common fittings for duct work. It has been our experience that an installer who puts in duct work with a total disregard of frictional resistance, will occasionally run into a trouble job where one or two runs will give only a piddling flow, and any amount of fiddling with blower speed or damper adjustments doesn't help out much. The only reason he doesn't have more such experiences is that the warm-air system fortunately has considerable flexibility—a large amount of give and take. Our contention is that there should be no such trouble jobs. A careful inspection of Figs. A to D may open your eyes and show you where the high resistors in a duct system may be located.

We show 6 groups of fittings in these four figures, and several subdivisions which are labelled "a, b, c, d, etc." Near each subdivision you will find a number. For example, Group 1a, shows "10 equiv. ft." The number 10 indicates that this take-off (A) at the bonnet has about the same resistance as 10 feet of straight duct.

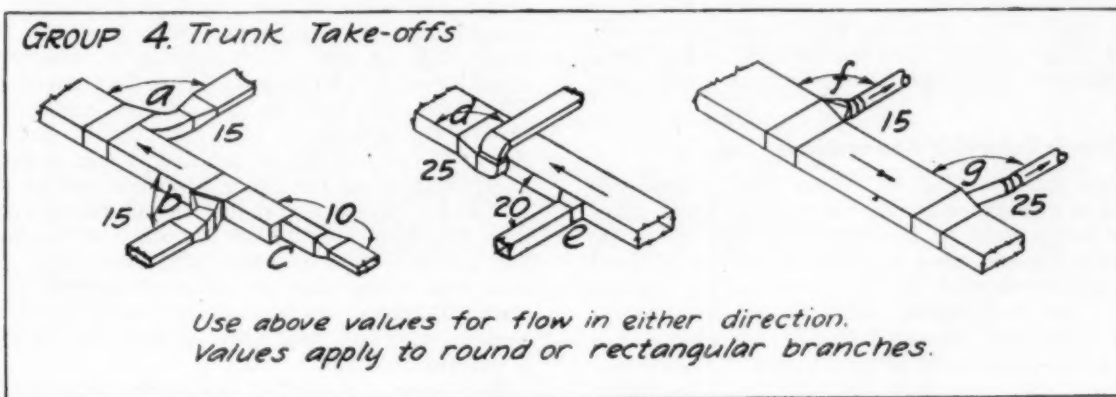


Fig. C

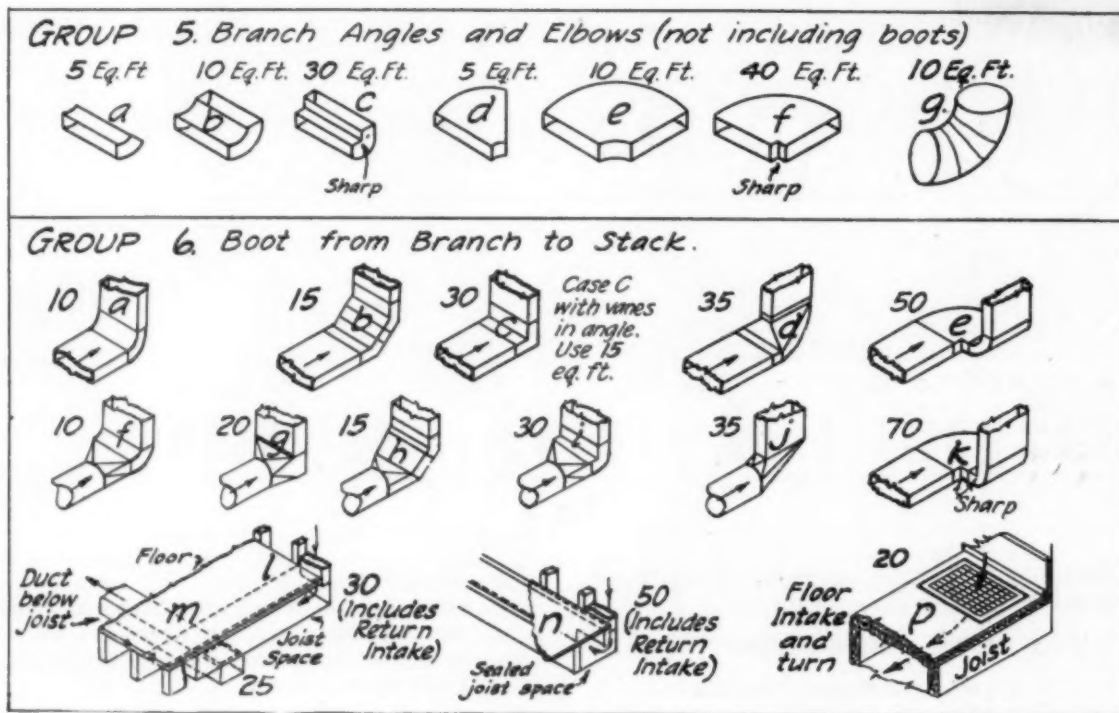


Fig. D

Take-Off Fittings (Fig. A)

Technical data on bonnet take-offs are scarce. Frankly, the values shown are the best estimates as obtained from a survey of a number of manufacturers' catalogs. If data are obtained in the future it is probable that the figures will be revised, and that some attempt at standardizing the types will be made. Since the resistance of the bonnet take-off connection is added to that for each of the branch ducts served by the trunk, it is good practice to maintain low resistance at this point.

Trunk Duct Angles and Elbows (Fig. B)

The equivalent lengths shown in Groups 2 and 3 are based on extensive data, and particularly those of Madison and Parker. In this case, also, since the resistance of the trunk line is added to that for each of the branch ducts served by the trunk, the use of streamlined fittings is generally recommended. In this connection we would like to have you appreciate the fact that sharp turns or high resistors are not outlawed. High resistors are permissible, and in some cases necessary, provided that you take them into account.

Trunk Take-Off Connections (Fig. C)

We have been unable to obtain even reasonable estimates of resistance for all the various trunk take-offs now being used in the field. The few we show are estimates based upon available data from fittings manufacturers. One of the biggest steps the fittings manufacturers could make would be to subsidize research in this field for the purpose of arriving at a few standard streamlined fittings that will meet every need. Until that day arrives you will have to estimate the resistance from this rather incomplete set of values.

Branch Angles and Boots (Fig. D)

The fittings in Group 5 are for ducts smaller than those shown in Fig. B. The values shown apply to branch ducts composed of wall stacks and also of such branch sizes as 4 x 8, 5 x 8, 6 x 8, etc. The values are based on data that are quite extensive.

Group 6 shows common types of boot fittings. Although fittings 6a to 6e, and also 6k, show horizontal wall stacks connected to vertical wall stacks, the equivalent lengths apply equally well to the common 4 x 8, 5 x 8, and 6 x 8 rectangular branches with transition piece between it and the boot. We have shown end boots, 6d and 6j, as equal to 35 equivalent feet. Actual design will affect these values considerably. Our survey of the data shows that a free-flowing end boot may have a low resistance, whereas a non-streamlined end boot may have considerably more resistance than that indicated.

In a short duct carrying relatively small quantities of air, the matter of equivalent lengths is not of great importance. If you have a duct, however, that has many fittings and which carries a relatively large quantity of air, be sure to favor that particular run. That one run may be the trouble maker. If you ignore the resistance you may obtain deficient air flow. If you attempt to counteract that deficiency by dampering down the other branches and by speeding up the blower you might just as well throw any design data into the waste basket. In other words, we do not ask you to streamline each and every run. We give you some reasonable estimates of equivalent lengths that will enable you to back up your judgment and to provide sufficient duct area to ease the resistance of a questionable run.

The Manual method of design requires that you add the equivalent lengths of all the fittings in each run leading to a register or return intake. By fittings we

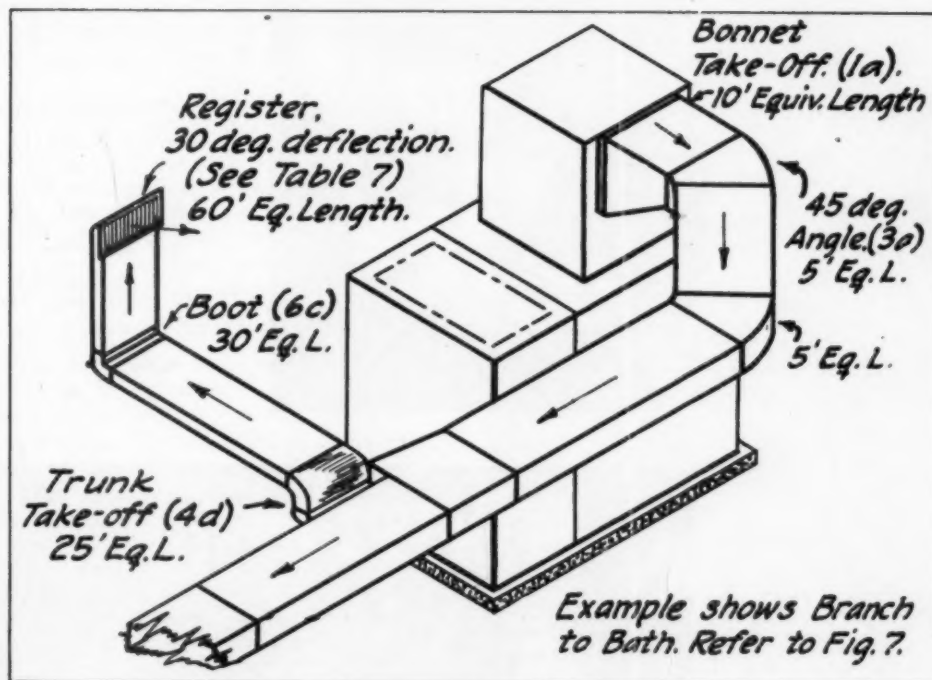


Fig. E

include the resistance of registers, but we do not include the horizontal runs of straight pipe or the vertical runs of stack, since these have been taken care of in the pre-calculated tables. The resistance of registers alone will be discussed in the next issue.

Fig. E shows a diagram showing a branch duct to a bathroom. The resistance of the register and fittings alone in this case is:

$$60 + 30 + 25 + 5 + 5 + 10 \text{ or } 135 \text{ eq. ft.}$$

Note this magnitude. The majority of runs in an average system will give magnitudes between 80 and 150 eq. ft. Remember that this is for register and fittings only. We can make the general statement that as far as the resistance to air flow is concerned, the length of straight duct in an ordinary residential installation is much smaller in magnitude than the equivalent length of fittings and register in that run. The fitting is the thing to watch.

Prices of Sections of "Practical Warm Air Heating"

Section No. 1—How to Make a Comfort Survey.....	Price 50c
Section No. 2—How to Check Frame House Construction.....	Price 50c
Section No. 7—Code and Manual for the Design and Installation of Warm Air Winter Air Conditioning Systems.....	Price 50c
Section No. 8—Yardstick for Classifying Warm Air-Winter Air Conditioners.....	Price 50c
Information and Sketch Blanks (Forms for gravity or winter air conditioning systems). Three sheets to a set.....	Sets of fifty \$5.00
Work Sheets for heat loss calculation and selection of equipment....	Sets of fifty \$3.00

Order with remittance should be sent to:
National Warm Air Heating & Air Conditioning Assn.
145 Public Square, Cleveland 14, Ohio



Engineering and drafting room (left) of the Consolidated Conditioning Corp., Mt. Vernon, N. Y. Large selling area for air conditioning and refrigeration guarantees activity here for some time to come.

A section of the sheet metal shop (below).



CONSOLIDATED SENDS A "SPECIALIST" TO EVERY COMMERCIAL A.C. PROSPECT

FINDING the general commercial building field ripe for air conditioning, the Consolidated Conditioning Corp., Mt. Vernon, N. Y., has swung into action with a large sales force, engineering staff and sheet metal shop. Among the types of prospects sought might be listed barber shops and beauty parlors, restaurants and night spots, theaters and churches, plus many other mercantile and industrial establishments. Not that this engineering-contracting company avoids residential conditioning work, but it places its greatest attention on the business type of prospect.

The Consolidated Conditioning Corp. embarked on a well planned campaign several years ago but was interrupted by the war. Now they are ready to go ahead on the new, peacetime basis. Their two-story building houses both sheet metal shop and offices. They are securing orders for heating, ventilating, cooling, drying, refrigeration and humidifying with carefully engineered equipment starting at 1/8 h.p. and no ceiling as to maximum sizing. Commercial refrigeration is a specialty and dovetails accurately with air conditioning.

R. Tree, president and general manager, advised recently that his company's selling force, including 35 men, is divided into groups of specialists. First, there is the merchandising-sales group who handle unit, or packaged, conditioning. Second, is the engineering staff who, besides aiding salesmen, approve all proposals and contracts. Third, is the applied engineering-sales group whose members are themselves both

By R. C. Nason



Goal of the sales force is to condition every commercial building, shop, and store within a radius of 50 miles.

engineers and salesmen. Howard Rose, formerly head of Suburban Air Conditioning Co., heads the merchandising department while Mr. Tree heads the sales engineer staff.

Inquiries from consumers are derived by familiar methods, that is, by newspaper display, by form letter and by personal canvassing. Another source of leads is the small contractor and suburban parts dealer who, not possessing enough engineering experience to do a complete selling job, passes the lead on to the Consolidated. For this he receives a commission in the event of sale by the larger company.

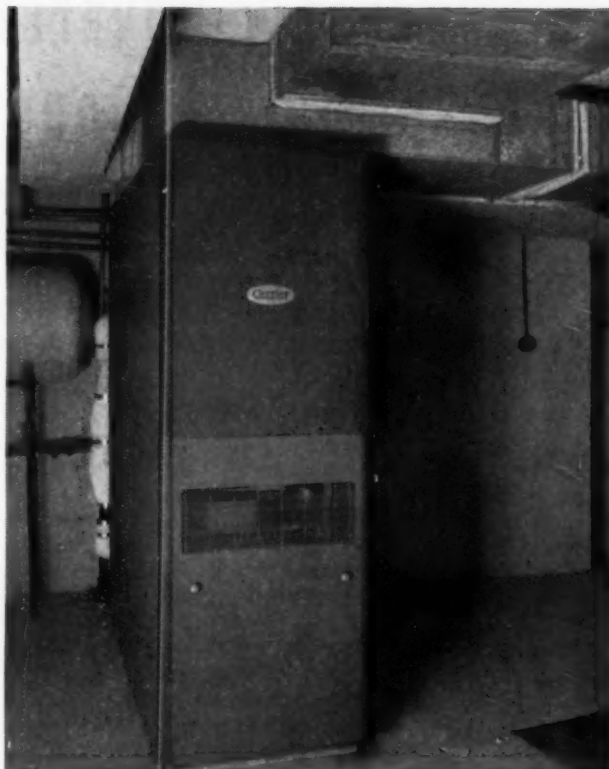
Salesmen Survey Premises

The normal selling procedure requires a premises survey. In the case of a barber shop, for example, the salesman jots down on a regular printed form the probable maximum number of customers and barbers, the number and size of electric lights, how many linen sterilizers there are, their size and location, skylights and street windows, their size and exposure plus other influential factors. The survey then is passed on to the Consolidated engineering staff for pricing, and a written proposal is tendered the shop owner.

There are several thousand prospects in the area covered by this conditioning contractor, whose activities cover Westchester County, the lower part of the State of Connecticut, Greater New York and Long Island. Sales outlets are limited only by the energy of the selling organization.

During the past year more than \$100,000 worth of business was done in the service department alone. This was the result of foresight in stocking repair parts, controls and other requisites plus 24-hr.-per-day call service to keep installations running. Service is not only on a day and night basis but also on a 365 day per year basis. The work kept five trucks running and the sheet metal and pipe shops active.

Explaining the why of the Consolidated department separation, Mr. Tree said that unless their business were divided in responsibility, conflict of effort would



Trim looking conditioning installation. Note the insulation of heat leader and lack of covering on return; also three canvas connections, two on return and one on warm-air duct.

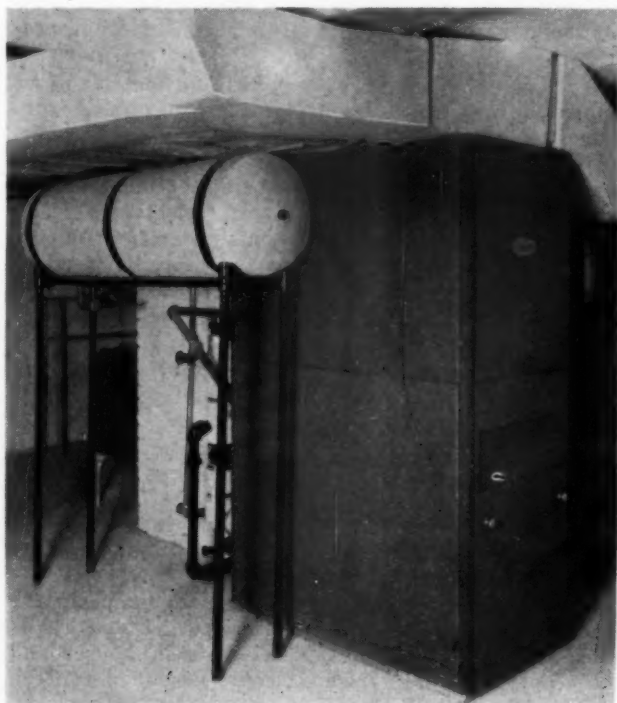
be inevitable. One would not, for example, send a fully qualified engineer to measure a home window for a ventilator; nor would good planning have a "merchandising" salesman consult with a factory superintendent on the intricacies of laying out a drying plant to remove the moisture from a commercial product such, let's say, as soda or aspirin. The latter requires an engineering salesman. All men must be assigned to work for which they are qualified, he believes.

The less-trained men work on packaged units such as house heating, space coolers, humidifiers, automatic controls; the more qualified men work on applied engineering and refrigeration projects. Several of the staff here have had 25 years' air conditioning experience.

"Feeders" Refer Leads

Another special feature of the selling campaign is the accumulation of what are known as "feeders", who include small contractors in the heating, sheet metal, plumbing and electrical fields. They refer leads to the Consolidated. There are already 60 such co-operators. On work these people feel they can handle alone, they have agreed to draw their equipment from the large stock of apparatus carried by the Consolidated. This would include packaged goods such as home furnaces, humidifiers, coolers, automatic controls, refrigeration units, stoker screws, oil burner nozzles, boiler feedline shutoffs, etc.

Before 1946 has ended Mr. Tree expects to have a total salaried and feeder group of about 500 men and women. Collectively they will handle every conceivable branch of heating, ventilating, air conditioning, cooling, drying, humidifying, refrigerating and material handling for industry.



This plant features hot water storage tank plus complete insulation of warm air ducts.

Industry-Government Cooperation Essential to Construction Expansion

By John W. Snyder*

WE ALL know that production is the answer to the threat of inflation and that as long as people have enough money to buy the things that industry can produce there is no danger of inflation. I want to go into detail on the subject of construction. There is a great threat of inflation in this field because there is a terrific need for houses during a time in which it will be impossible to build them fast enough.

Stimulation of activity in construction, therefore, we believe is one of our chief responsibilities in the period just ahead. We believe, in fact, that the construction activity will be a sort of guidepost along the way to reconversion and postwar expansion.

This is not only because a shortage of houses demands prompt expansion of the construction industry, but because we know that construction activity breeds other production. For every dollar spent on housing, there are two dollars spent in other markets. The existence of a market for houses means the existence of a market for numerous other commodities—house furnishings, consumer durables, textiles, radios, automobiles. Home building generates activity in road building, school building, the building of stores, the extension of bus lines. It means employment not alone for the loggers and lumberman and carpenters, the brick manufacturers and the brick layers, the plumbers and the plasterers, the paint manufacturers, and millworkers. It also opens up jobs for railroad men and truck drivers, for deliverymen and retail clerks, for teachers and people in scores of other types of work.

Recognizing this, the Government has set up a six-point program to stimulate the construction industry immediately, so that as fast as possible we may build the new houses that people must have. It provides:

First, that through inter-agency action there shall be an active campaign to increase the supply of scarce building materials, and that where necessary price and wage increases and priorities to break bottlenecks shall be granted.

Second, the Civilian Production Administration is strengthening inventory controls to prevent hoarding of building materials so that building will not be delayed by artificially created shortages.

Third, the OPA will strengthen price control over building materials to counteract inflationary pressure.

Fourth, the federal credit agencies will do everything possible to discourage excessive and unsound lending on mortgages. They will enlist voluntary cooperation of banks and other lending institutions to minimize the danger of inflated prices due to excessive demand.

Fifth, representatives of industry groups are to be called to Washington to map out with government a voluntary program to increase quickly the production of all materials and facilities needed for an expanded

home-construction industry, and also to help fight inflated building costs and real estate prices.

Sixth, the National Housing Agency, in conjunction with industry representatives will provide an information and advisory service on home values available to any prospective home buyer regardless of whether federal assistance in financing is involved.

Now, obviously, all these steps involve specific actions on the part of Government, but they also involve specific and constant cooperation on the part of the industry and of business generally.

For instance, Government at the same time that it formulated this program took a specific action—in the elimination of Order L-41, which previously limited construction—so that the industry can get going without delay and get into the business of building houses wherever and of whatever type the times demand.

We know, of course, that the removal of L-41 is only part of the answer to today's construction problem. The removal of the order does not, of itself, increase the supply of basic building materials. Nor does it bring back the skilled workers of the building trades and the allied supply lines, who have been scattered during the war. It does not, of itself, increase the number of construction and supply concerns operating. It does, however, facilitate the distribution of supplies and allows for more types of construction.

Now let me say a few words about *what has been done* under the six points of our construction program:

First on the question of supplies and materials, we believe we are making considerable progress. A subcommittee of the Inter-agency Construction Committee set up in my office will give continuing attention to solving the problem of any shortages which develop. Some price increases, to stimulate production, already have been granted, and numerous priorities for obtaining needed equipment have been authorized. In addition, some plants which needed assistance in financing were referred to banks or Government lending agencies.

Our policy is to continue an inventory control program to prevent hoarding or pre-emptive buying of building materials which might delay construction by creating artificial shortages. Inventories are limited to a practical working minimum, but only scarce items are under inventory control.

I believe that the price control program of OPA is necessary for the present in holding the line against inflation.

Continuation of the OPA program to maintain the lid on rents also during the critical period ahead is of equal importance to the people who rent houses and the people who build them. If rents go out of control, it increases the likelihood of speculation in housing, and that isn't good for business or anyone else.

(Continued on page 100)

*An address to the Construction Industry Advisory Council of the Chamber of Commerce of the United States, November 1, 1945.

Research Residence Tests of a Conversion Gas Burner [Part 2]

In view of the current interest in gas for home heating, it is believed the tests reported in these two papers are both timely and important. Note tests were made under gravity air circulation—results none-the-less show: capacities, register temperatures, distribution same with gas as with coal; efficiency at bonnet more constant with gas than with coal; overall house efficiency identical; gas burners need not show high flue temperatures if correctly installed. Part 2 reports cost of gas vs. coal.

THE results of a previous study of the seasonal fuel consumption and economy with six varieties of solid fuels extended to include those for the season of 1929-1930 and for the operation with manufactured gas, are given in Table 8. Inasmuch as weather conditions during the tests were not controllable, and the rates of combustion varied with the weather, the procedure shown in Columns 4, 5 and 6 of Table 8 was followed to obtain an equable basis for comparing the results. Column 4 shows the temperature difference between the air inside and that outside of the house. The values shown in this column are proportional to the operating loads on the heater. These loads were unequal. Column 5 shows the average combustion rate for the particular fuel and load and for the particular number of daily tests from Column 3. Column 6, obtained by dividing values of Column 5 by those of Column 4, shows the factors upon which the relative consumption of fuel were based. The values in Column 6 were used for the computation of the values in Columns 8, 12, and 15.

Column 7 shows a conversion of the values of Column 6 from a weight basis to one of calorific value. It may be used to compare the fuels on the basis of thermal efficiency. The values show that fuels for which the smallest number of heat units were expended in heating the house were not the most economical fuels from the standpoint of cost. Column 8 shows the approximate combustion rate necessary to heat the house to 70 deg. F. in zero weather. Columns 9, 10, and 11 are, respectively, the heat value, ash content, and percentage of volatile gases in the fuels.

By using the values of Column 6 and a total seasonal heating load of 6,160 degree-days, the total seasonal tonnage shown in Column 12 was obtained. A seasonal load of 6,160 degree-days is about normal for the locality of the Research Residence, and inasmuch as it was the actual seasonal load with the first winter's fuel, anthracite coal, the consumption of each of the other fuels was calculated to the same basis. The degree-day unit corresponds to a mean temperature difference between indoors and outdoors of 1 deg.

TABLE 8
COMPARISON OF FUEL CONSUMPTION AND RELATIVE ECONOMY OF FUELS IN RESEARCH RESIDENCE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Daily Test Group Nos.	Fuel Fired	Number Daily Tests Averaged	Av. Diff. Temp. In-out	Av. Comb. Rate, lb. per sq. ft. Grate per hr.	Av. Comb. Rate per 1 deg. Diff. In-out	Av. B.t.u. Expended per sq. ft. of Grate per 1 deg. Diff. In-out	Av. Comb. Rate, Zero Weather	B.t.u. per lb.	Ash per cent	Volatile per cent	Tons* Required for Equal Season	Minimum, Net Ash to Handle, lb.	Cost† per Ton at Urbana, dollars	Relative Cost of Heating, dollars
94-103	Anthracite.....	9	41.5	1.90	0.0459	580	3.21	12 618	11.75	5.79	9.7	2280	16.50	160
330-355	Anthracite.....	13	50.8	2.285	0.045	584	3.15	12 976	11.35	4.80	9.6	2180	16.50	158.5
	Anthracite (Fan).....	14	48.9	2.08	0.0426	553	2.98	12 976	11.35	4.80	9.1	2070	16.50	150
118-120	Coke (By-product).....	3	36.1	1.59	0.0440	576	3.08	13 100	9.57	0.77	9.4	1800	13.50	127
121-148	Bituminous (High Ash, Ill.)	19	38.3	2.75	0.0720	806	5.04	11 178	12.89	36.07	15.4	3970	6.50	100
220-231	Pocahontas.....	11	33.8	1.40	0.0415	616	2.90	14 836	5.15	17.84	8.9	920	9.25	82
233-239	Bituminous (Low Ash, Ill.)	7	34.9	2.12	0.0608	722	4.25	11 881	8.71	32.00	13.0	2270	7.75	101
272-275 280-282	E. Kentucky.....	7	38.6	2.04	0.0529	725	3.70	13 698	7.18	37.10	11.3	1620	8.50	96
367-397	Gas.....	31	33.1	86.5	2.61	512	182.7	565			Cu. ft. required for equal season		Cost per M cu. ft. dollars	290

Note: All tests made with dual thermostatic control.

*Season tonnage based on a load of 6160 deg.-days.

†Takes no account of variations in price during season, or account of locality.

COMPARATIVE COSTS OF HEATING WITH

A GAS	B OIL		C BITUMINOUS COAL (Hand-fired without controls) (See note below ²)								
100,000 B.t.u. per therm	140,000 B.t.u. per gallon		Heating Value in B.t.u. per pound								
COST (cents per therm) (See note below ¹)	Heating Unit DESIGNED FOR Oil Burning	Heating Unit CON- VERTED TO Oil Burning	Low			Medium			High		
	COST (cents per gallon)		10,000	10,500	11,000	11,500	12,000	12,500	13,000	13,500	14,000
			COST (dollars per ton)								
3.0	4.2	3.7	4.10	4.35	4.55	4.75	4.95	5.15	5.35	5.55	5.75
3.2	4.5	3.9	4.40	4.60	4.85	5.05	5.30	5.50	5.70	5.95	6.15
3.4	4.7	4.2	4.65	4.90	5.15	5.35	5.60	5.85	6.10	6.30	6.55
3.6	5.0	4.4	4.95	5.20	5.45	5.70	5.95	6.20	6.45	6.70	6.95
3.8	5.3	4.7	5.20	5.50	5.75	6.00	6.25	6.55	6.80	7.05	7.30
4.0	5.6	4.9	5.50	5.80	6.05	6.30	6.60	6.90	7.15	7.45	7.70
4.2	5.9	5.1	5.75	6.05	6.35	6.65	6.95	7.20	7.50	7.80	8.10
4.4	6.1	5.4	6.05	6.35	6.65	6.95	7.25	7.55	7.85	8.15	8.45
4.6	6.4	5.6	6.30	6.65	6.95	7.25	7.60	7.90	8.20	8.55	8.85
4.8	6.7	5.9	6.60	6.95	7.25	7.60	7.90	8.25	8.60	8.90	9.25
5.0	7.0	6.1	6.90	7.20	7.55	7.90	8.25	8.60	8.95	9.30	9.60
5.2	7.3	6.4	7.15	7.50	7.85	8.20	8.60	8.95	9.30	9.65	10.00
5.4	7.5	6.6	7.45	7.80	8.15	8.55	8.90	9.30	9.65	10.00	10.40
5.6	7.8	6.9	7.70	8.10	8.45	8.85	9.25	9.60	10.00	10.40	10.80
5.8	8.1	7.1	8.00	8.40	8.75	9.15	9.55	9.95	10.35	10.75	11.15
6.0	8.4	7.3	8.25	8.65	9.05	9.50	9.90	10.30	10.75	11.15	11.55
6.2	8.7	7.6	8.55	8.95	9.40	9.80	10.25	10.65	11.10	11.50	11.95
6.4	8.9	7.8	8.80	9.25	9.70	10.10	10.55	11.00	11.45	11.90	12.30
6.6	9.2	8.1	9.10	9.55	10.00	10.45	10.90	11.35	11.80	12.25	12.70
6.8	9.5	8.3	9.35	9.80	10.30	10.75	11.20	11.70	12.15	12.60	13.10
7.0	9.8	8.6	9.65	10.10	10.60	11.05	11.55	12.05	12.50	13.00	13.45
7.2	10.1	8.8	9.90	10.40	10.90	11.40	11.90	12.35	12.90	13.35	13.85
7.4	10.3	9.1	10.15	10.70	11.20	11.70	12.20	12.70	13.25	13.75	14.25
7.6	10.6	9.3	10.45	10.95	11.50	12.00	12.55	13.05	13.60	14.10	14.65
7.8	10.9	9.6	10.70	11.25	11.80	12.35	12.85	13.40	13.95	14.45	15.00
8.0	11.2	9.8	11.00	11.55	12.10	12.65	13.20	13.75	14.30	14.85	15.40
8.2	11.5	10.0	11.30	11.85	12.40	12.95	13.55	14.10	14.65	15.20	15.80

¹ NOTE: To find your local Gas cost in cents per therm, divide local market price in cents per 1000 cubic feet (your local gas company can give you the figure that applies in your case) by the number of therms in 1000 cubic feet (see below).

TYPE OF GAS	Manufactured			Mixed		Natural	
Average B.t.u. per cu. ft.	500	600	700	800	900	1000	1100
Number of therms in 1000 cu. ft.	5.0	6.0	7.0	8.0	9.0	10.0	11.0

² NOTE: Heating value in B.t.u. per pound for a given Coal or Coke may be obtained from your fuel dealer. All heating values of Coal are based on commercial conditions with normal moisture.

* NOTE: Comparisons in the Table are based on the assumption that the fuels are burned in the same building and in the same heating system; reasonably well operated and properly adapted to the fuel in use. The costs shown for each type of fuel are based upon average values of the "over-all house efficiency," as determined at the University of Illinois from extensive tests conducted in two research homes where the heaters were located in the basement. "Over-all house efficiency" represents that portion of heat in the fuel which is actually used for heating the *entire house*. Such an efficiency may be affected by differences in house construction, living habits, heating plant design, by installation and by operating controls.

VARIOUS FUELS IN THE SAME BUILDING*

D									E				
BITUMINOUS COAL (Hand-fired with controls) BITUMINOUS COAL (Stoker-fired) ANTHRACITE (Hand-fired without controls) COKE (Hand-fired without controls)									ANTHRACITE (Hand-fired with controls) ANTHRACITE (Stoker-fired) COKE (Hand-fired with controls)				
Heating Value in B.t.u. per pound									Heating Value in B.t.u. per pound				
Low			Medium			High			Medium		High		
10,000	10,500	11,000	11,500	12,000	12,500	13,000	13,500	14,000	12,000	12,500	13,000	13,500	14,000
COST (dollars per ton)									COST (dollars per ton)				
4.85	5.10	5.35	5.60	5.85	6.10	6.35	6.60	6.80	7.20	7.50	7.80	8.10	8.40
5.20	5.45	5.70	6.00	6.25	6.50	6.75	7.00	7.30	7.70	8.00	8.30	8.65	8.95
5.50	5.80	6.10	6.35	6.65	6.90	7.20	7.45	7.75	8.15	8.50	8.85	9.20	9.55
5.85	6.15	6.45	6.75	7.05	7.30	7.60	7.90	8.20	8.65	9.00	9.35	9.70	10.10
6.15	6.50	6.80	7.10	7.40	7.70	8.05	8.35	8.65	9.15	9.50	9.90	10.25	10.65
6.50	6.85	7.15	7.50	7.80	8.10	8.45	8.80	9.10	9.60	10.00	10.40	10.80	11.20
6.85	7.15	7.50	7.85	8.20	8.55	8.90	9.20	9.55	10.10	10.50	10.90	11.35	11.75
7.15	7.50	7.85	8.25	8.60	8.95	9.30	9.65	10.00	10.55	11.00	11.45	11.90	12.35
7.50	7.85	8.20	8.60	8.95	9.35	9.70	10.10	10.45	11.05	11.50	11.95	12.40	12.90
7.80	8.20	8.60	9.00	9.35	9.75	10.15	10.55	10.90	11.55	12.00	12.50	12.95	13.45
8.10	8.55	8.95	9.35	9.75	10.15	10.55	10.95	11.35	12.00	12.50	13.00	13.50	14.00
8.45	8.90	9.30	9.75	10.15	10.55	11.00	11.40	11.80	12.50	13.00	13.50	14.05	14.55
8.80	9.20	9.65	10.10	10.55	10.95	11.40	11.85	12.30	12.95	13.50	14.05	14.60	15.15
9.10	9.55	10.00	10.45	10.90	11.35	11.85	12.30	12.75	13.45	14.00	14.55	15.10	15.70
9.45	9.90	10.35	10.85	11.30	11.75	12.25	12.75	13.20	13.95	14.50	15.10	15.65	16.25
9.75	10.25	10.75	11.20	11.70	12.20	12.70	13.15	13.65	14.40	15.00	15.60	16.20	16.80
10.10	10.60	11.10	11.60	12.10	12.60	13.10	13.60	14.10	14.90	15.50	16.10	16.75	17.35
10.40	10.90	11.45	11.95	12.50	13.00	13.50	14.05	14.55	15.35	16.00	16.65	17.30	17.95
10.70	11.25	11.80	12.35	12.85	13.40	13.95	14.50	15.00	15.85	16.50	17.15	17.80	18.50
11.05	11.60	12.15	12.70	13.25	13.80	14.35	14.90	15.45	16.35	17.00	17.70	18.35	19.05
11.40	11.95	12.50	13.10	13.65	14.20	14.80	15.35	15.90	16.80	17.50	18.20	18.90	19.60
11.70	12.30	12.85	13.45	14.05	14.60	15.20	15.80	16.40	17.30	18.00	18.70	19.45	20.15
12.05	12.60	13.25	13.85	14.45	15.00	15.65	16.25	16.85	17.75	18.50	19.25	20.00	20.75
12.35	12.95	13.60	14.20	14.80	15.45	16.05	16.70	17.30	18.25	19.00	19.75	20.50	21.30
12.70	13.30	13.95	14.60	15.20	15.85	16.50	17.10	17.75	18.75	19.50	20.30	21.05	21.85
13.00	13.65	14.30	14.95	15.60	16.25	16.90	17.55	18.20	19.20	20.00	20.80	21.60	22.40
13.35	14.00	14.65	15.35	16.00	16.65	17.35	18.00	18.65	19.70	20.50	21.30	22.15	22.95

INSTRUCTIONS FOR USE OF CHART

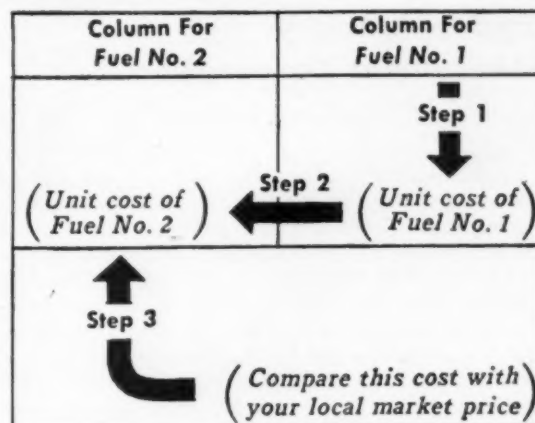
To compare the cost of fuel selected as a base (Fuel No. 1) with another fuel (Fuel No. 2):

Step 1. Locate in the proper vertical column the unit cost prevailing in your locality for Fuel No. 1. (For Gas see Section A; for Oil see Section B; for Solid Fuels see Sections C, D, and E. Note that several firing methods and several heating values are shown for Solid Fuels.)

Step 2. Read across the Table in the same horizontal line to locate in the proper column the comparative unit cost of Fuel No. 2.

Step 3a. If the market price prevailing in your locality for Fuel No. 2 is greater than the cost indicated in Step 2, a change to this fuel will increase your total fuel bill.

Step 3b. If the market price prevailing in your locality for Fuel No. 2 is less than the cost found in Step 2, a change will lower your fuel bill.



F° prevailing for one day, and the seasonal load, therefore, corresponds to the summation of the indoor-outdoor temperature differences for all days of the season. This corresponds to the difference between an average indoor temperature of 65 deg. F. and the average outdoor temperature for the heating season multiplied by the number of days in the season. The values in Column 12 are in the same order as those of Column 6, and express the fuel consumption in the usual commercial units. From the tonnage and the unit cost (Column 14) the relative cost of operation shown in Column 15 was obtained.

From values in Columns 14 and 15 it may be observed that the cost of gas fuel was approximately 2.9 times that of bituminous coal and 1.9 times that of anthracite coal under the conditions existing at the Research Residence. Column 14 shows the actual local price paid for the fuels in the bin and, since these prices vary with season and locality, the values in Column 15 should not be regarded as absolute. Different prices from those quoted might easily effect a rearrangement of the values in Column 15.

Fuel Economy and Fuel Costs

The relative daily fuel consumption and fuel cost to heat the Research Residence with gas and with anthracite coal used in the same installation are shown in Fig. 42. The two lower curves give the fuel consumption for various indoor-outdoor temperature differences maintained for 24 hours. Since the fuel consumption is measured in different units, these two curves are not directly comparable. The upper set of curves, however, derived from the fuel consumption curves, and showing the fuel cost to heat for a 24-hr. period, are expressed in the same units and are therefore directly comparable. The daily costs for gas fuel varied from 1.85 to 2.0 times the cost for anthracite coal, depending on the indoor-outdoor temperature difference. For an outdoor temperature of 30 deg. F., represented by an indoor-outdoor temperature difference of 40 deg., the cost of gas for a 24-hr. period was \$1.85 and that for hard coal was \$0.95. These figures were based on the following heat values and actual fuel costs at Urbana, Ill.:

Anthracite coal—12,976 B.t.u. per lb. at \$16.50 a ton.

Manufactured gas—565 B.t.u. per cu. ft. at \$0.75 per 1,000 cu. ft.

The curves also show the relative costs with other unit prices for the fuel.

The following conclusions may be drawn, based on

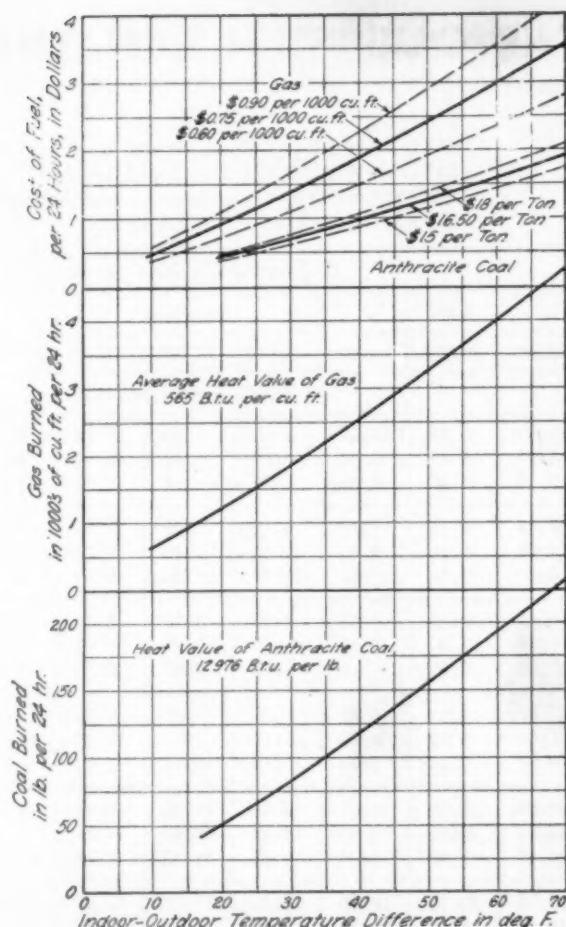


FIG. 42. FUEL CONSUMPTION AND FUEL COST CURVES FOR COAL AND GAS FIRING IN NINTH INSTALLATION

fuel costs at Urbana, Ill., and on the operation conditions maintained at the Research Residence.

(1) The seasonal cost for operation with manufactured gas having a calorific value of 565 B.t.u. per cu. ft. was approximately 2.9 times the cost with bituminous coal having a calorific value of 11,178 B.t.u. per lb.

(2) The seasonal cost for operation with manufactured gas having a calorific value of 565 B.t.u. per cu. ft. was approximately 1.9 times the cost with anthracite coal having a calorific value of 12,618 B.t.u. per lb.

Snyder—Industry-Government Cooperation

(Continued from page 96)

Credit controls also can be vitally helpful in holding down speculation in housing. We are working now on a program of cooperation between the Government and the financial institutions which would help reduce the dangers of inflation in this field. We feel sure that business men throughout the country are aware of the dangers inherent in a lax credit policy. They are interested in protecting their own long-range interests and those of their communities and country by exercising due caution in the extension of credit. One means of doing this is to withhold loans made on the basis of inflated appraisals.

We are faced with a complicated situation. There

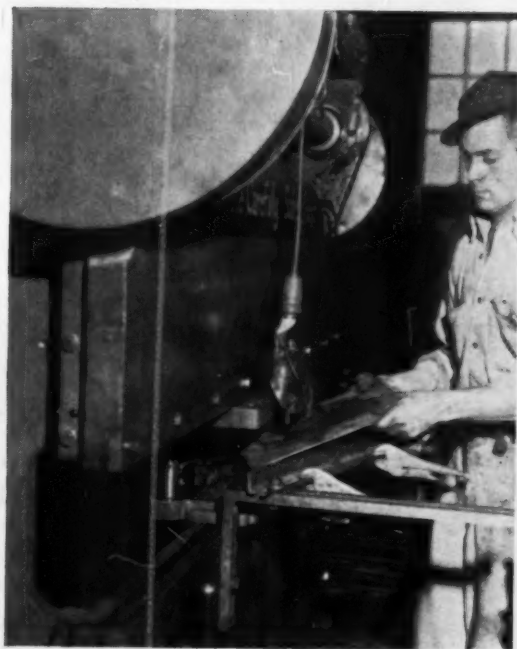
are on the one hand vast sources of credit, plus tremendous liquid assets in the hands of individuals. On the other hand there is an acute shortage of housing and the likelihood that it may be a long time before enough houses can be built to satisfy the demand.

Considerable attention has been given to the advisability of price control on finished houses. It is not our present intention to ask the Congress for such legislation. It is our present intention, however, to exercise the powers I have outlined here, to undertake the six-point program I have discussed, and to ask the cooperation of the industry and the financial institutions, in promoting a construction program on a basis of fair and reasonable prices.

We believe we are following a course of action which will help to achieve a high level of production. But in the final analysis, the solution of the construction problem depends on the initiative of American businessmen.

AMERICAN ARTISAN

SHEET METAL



DEVOTED TO SHEET METAL CONTRACTING AND FABRICATING

STEEL AT YOUR SERVICE STEEL



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• The era of Peace which Christmas ushers in this year will bring a sound Prosperity to this country. It will be felt in the cities, in the tiniest cross-road villages, on the farms. It will affect the lives of all of us. It will bring new ideas, new standards of living, new products. Users of steel will demand fine quality and quick intelligent service from suppliers in order to meet greater competition. If you use steel *in any form*, including Stainless Steel—call us. Steel is our business. We've been at it for a good many years and can help you, *quickly*, through our experience *and our complete warehouse stocks*.

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Ductwork Of Stainless Steel Features "Water Tight" Joints

WHEN Industrial Rayon Corporation, a few years ago, built its first plant at Painesville, Ohio, the Riester & Thesmacher Company of Cleveland fabricated and installed a very large tonnage of aluminum and galvanized steel ducts, housings, special parts for the rayon machines. Continuously, through the years since, the R&T company has fabricated and installed sheet metal work, new ducts and housings for additional machines, and changed, altered, or remodeled existing installations.

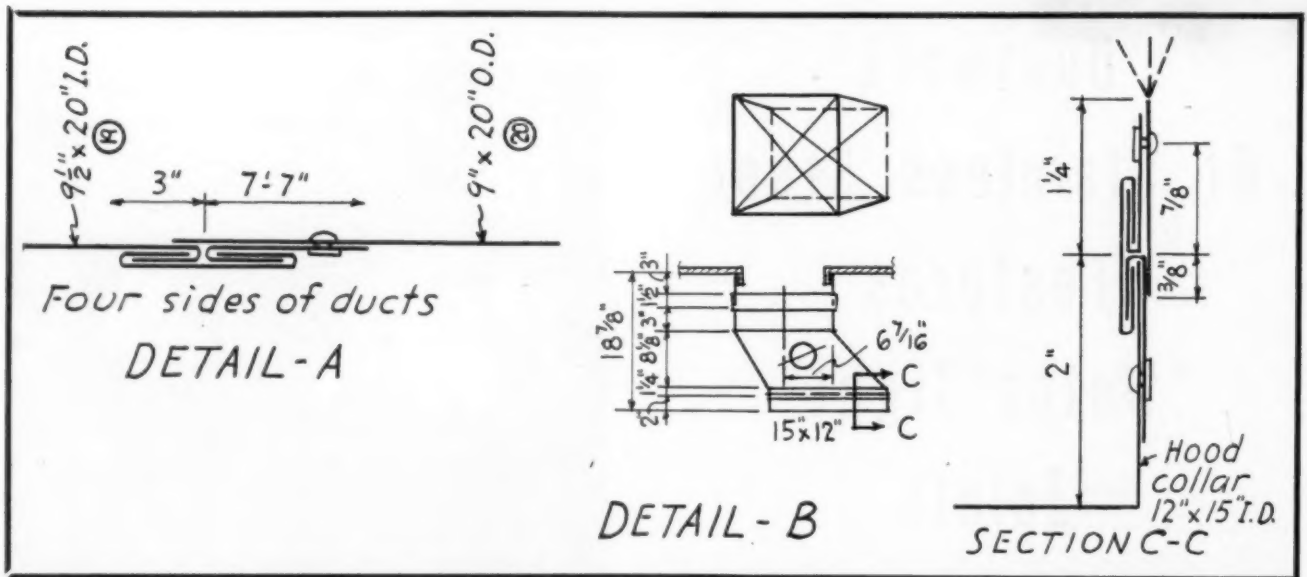
Last winter an interesting contract called for the fabrication of ducts, fittings and housings of stainless steel—22 gauge (.031"), Type 316—a very hard and tough material. The installation has scores of interesting but complicated fittings—so many that it is impossible to show more than two or three which are roughly typical.

The duct work consists of straight sections of uniform cross section and many rectangular transitions. The vertical sections are put together with drive cleats on the four sides, but are made more drain tight through the use of an inside strip which is riveted to the upstream air section as shown in Detail A.

Some of the most interesting construction and also the location of most of the intricate fittings occurs in the risers in the duct systems. Detail B shows one typical fitting—the feature being the very rigid construction at the bottom collar. The inside plate which

Top—Pittsburgh locks had to be formed in the press brake to obtain the tight lock required in the tough stainless steel. Center—Connecting angles were button punched and riveted to the duct section. Bottom—Example of the twisted fittings which abound throughout the system.





Unusual construction to obtain water and air tightness, plus extra stiffening, features the duct section connections. Note the riveted-on over lapping plates in Section C-C and Detail A specified to prevent escape of any water or air.

closes the joint was riveted to the top section in the shop. So was the inside plate of the bottom section—note this forms the “hook” for the drive cleat. With the drive cleat in place there are five thicknesses of metal to stiffen the joint and make it water tight.

Not quite so stiff, but just as air tight, is the riser connection shown in Detail C—The construction at the lower end at the collar is similar to Detail B while the middle joint shown in Section D lacks the extra plate inside the bottom section of the joint.

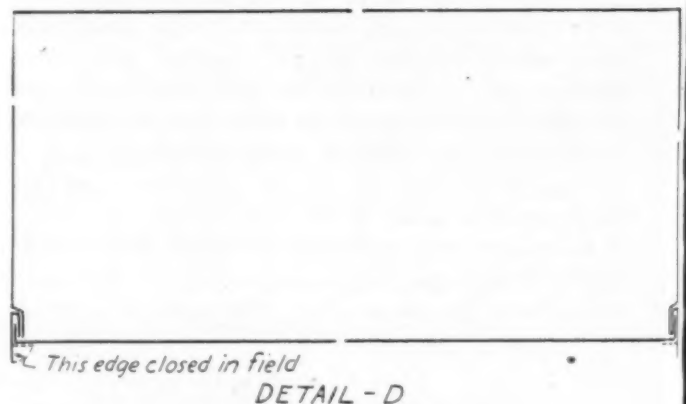
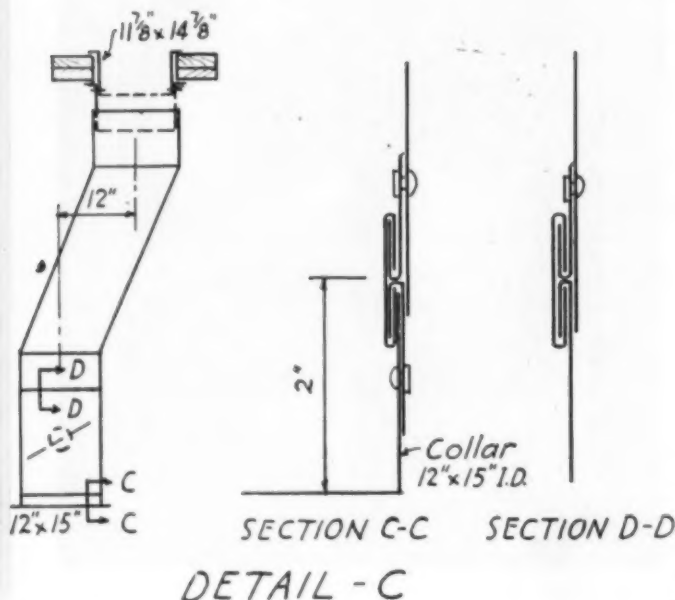
All these risers are constructed as shown in Detail D which indicates a two-piece duct with Pittsburgh locks at two corners.

An interesting section is the one having a “clean-out” door in the bottom of the duct. Detail E shows one of these cleanout sections in plan and elevation, while one of the photographs shows a section (bottom side up) both open and closed. The duct is made of one piece (wrap around) leaving a 3 1/4-inch flange on

the hinge side of the bottom and 1/4-inch flange on the other side. This construction is shown in Section D of Detail E. The ends of the sections are joined and made air tight with the combination drive cleat and “S” lock shown in Section A of Detail E.

The hinged and stiffened cover is clearly shown in the photograph. The air slot (Section C of Detail E) has several oversized drive cleats, approximately 11 inches long which slide in the slot to provide adjustment of the air through the slot. The 1/2 x 1/2 x 1/8-inch angles for stiffening the cover are riveted as shown and are formed of 22-gauge stainless steel. The cross seam between sections (Section A-A, Detail E) are unusual, but were designed for additional stiffness and air tightness.

R&T found that the 22-gauge stainless steel was too stiff to put through the lock forming machine for tight Pittsburgh locks, so locks were made in the power press brake using dies as shown in Detail F. The



Collar connections (Section C-C) obtain extra stiffness and tightness through use of extra riveted-on plates which conceal the joint. The riser shown is typical of the twisted sections which occur profusely in this R&T contract.



The photo above shows a duct section with clean-out door and air slot (duct is upside down). The valve can be moved in the slot to obtain adjustment. Detail F shows dies used in press brake to form Pittsburgh locks in stiff material.

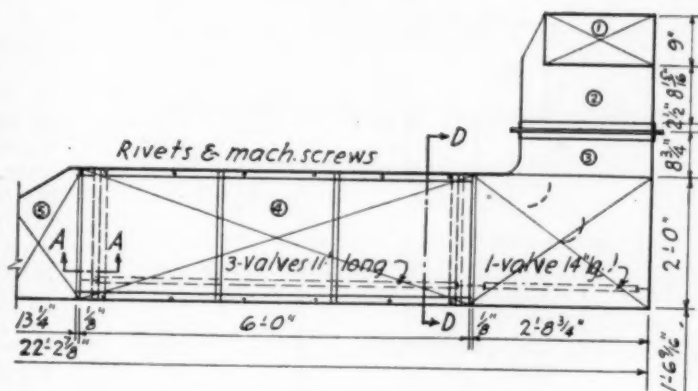
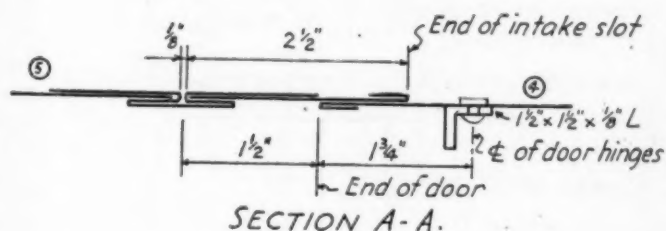
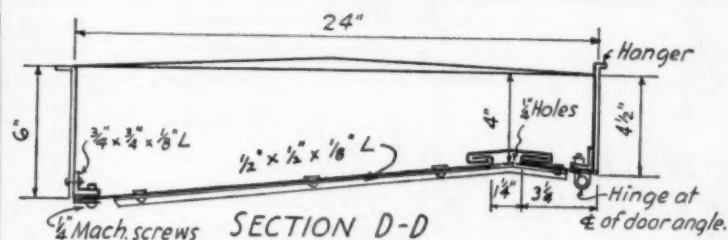


DETAIL-F

press brake was also used with suitable dies to form all bends and flanges in the sections. After forming, the Pittsburgh locks had to be closed with a hammer—a mallet wouldn't do the work.

Sections were put together and flanges held in place by metal screws, rivets and bolts. All rivets, bolts and screws used were Monel metal. The purpose of this construction, including the use of heavy stainless steel, is to avoid deterioration from moisture since there is much moisture generated or released in the process and entrained in the air which passes through these ducts.

Detail E, Right, shows a duct section having air slot and clean-out door. Section D-D shows the construction of the "valve" and section with hangers. Section A-A shows the strong cross seam connection with drive cleat and "S" lock.



DETAIL-E

Getting the Most Out of Your Press Brake

1001 Standard and Special Bending,
Forming, Flanging, Punching Operations
Your Press Brake Can Perform

By Ernest E. Zideck
Sheet Metal Consulting Engineer

Forming Pittsburgh Locks

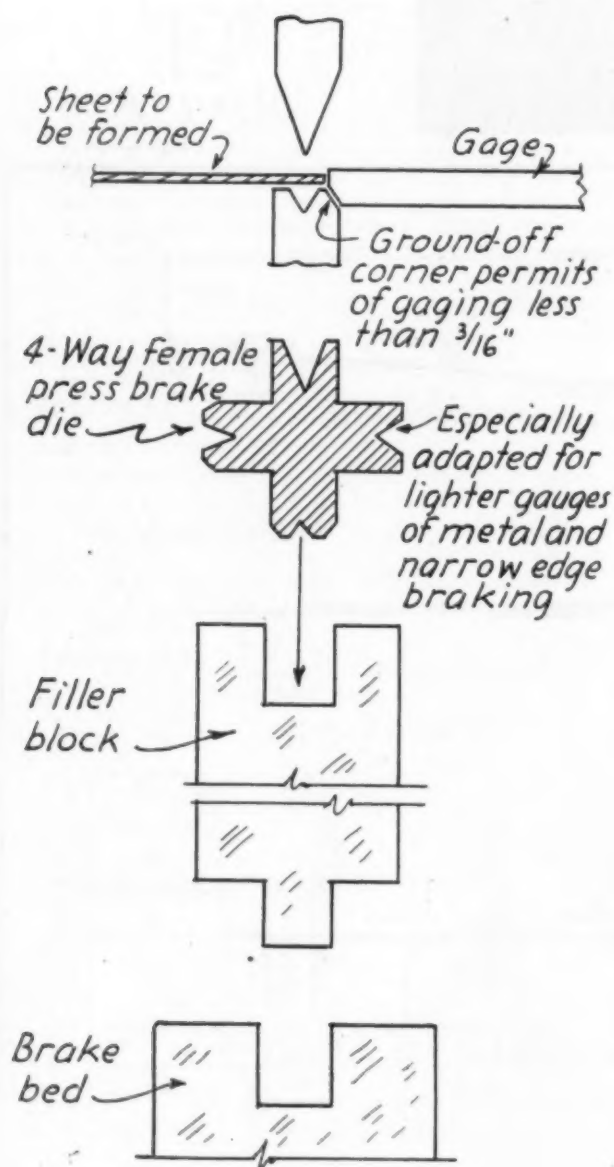


Fig. 1 Four-way Female Die

IN THE preceding articles of this series we have shown that the press brake can be adapted for light sheet metal narrow edge braking, and supplemented the several drawings with text, explaining the behavior of metal in what is called an "air bend". In bends called "sharp", the first bend does not compress the metal on the inside of the bend although expanding it on the outside, while the second bend "wraps" the metal tightly about the point of the male die. Compression is both on the inside and on the outside of the bend, this bend requiring almost five times as much pressure as is required in an "air bend." We have also shown that the congestion of metal in a narrow edge braking occurs from the "edge" of the strip, and that we must add a certain proportion of metal to the width or dimension desired, because that much of the metal will disappear in its braking.

In a subsequent article of this series we shall show the behavior of sheet metal in what may be called "stamping," although the formation is "bending" merely, but a bending where the metal is caused to either expand or compress. This kind of press brake bending requires much more force (and press brake capacity) than it would be wise to do in a smaller capacity press brake, and if we do not have the right capacity brake it is best to avoid doing such forming, substituting a step-by-step formation.

In this article we shall show and describe certain newer dies that will prove practical and of worth in shops having a great variety of formative work to do, and especially so in gauges of metal up from the 22 gauge. As will be seen in the four views grouped under Fig. 1, the four-way female die is a departure from the standard female die of the kind, in that this die consists of four "tongues" each of which fits into the standard width of receptacle for the tongues, whether they are in the bed of the brake or in filler blocks. Obviously, this die is designed for very light gauges of sheet metal, and should we attempt to do work in this die in metal exceeding 22 gauge, the "V" in the female die might expand and detract from its usefulness. Standard male dies, and especially the "V" male dies, are used for formative work in connection with this four-way female die. It will be seen in the uppermost view of Fig. 1 that, with a ground-off edge of the die and another such ground-off edge

on the gaging finger, we can gage the metal at less than $\frac{3}{16}$ inches, the resulting width of the braked-up metal being less than $\frac{5}{32}$ inches, which is about the minimum figured in any kind of edge-braking. It must be borne in mind that the metal to be braked by these means must in part repose on the hind portion of the die, as shown in the drawing, whereas if we brake pieces of metal not exceeding one foot in length a mere thickness of metal so reposing is sufficient. In longer strips so worked this "seat" for the strip's edge should be at least one-sixteenth of an inch.

This novel four-way female die is especially adapted for shorter pieces of metal. Its advantage is that it is light to handle, and it can be easily turned about to select the right kind of opening for the particular formature we desire. One such opening can be merely 90 degrees, shallow, for 90 degrees edge-braking. A second opening might be slightly deeper, for formatures other than edge-braking (within the width of the strip), and the other two openings might be for a standard male "V" die, either for "air-bends" or for bends past 90 degrees, for doubling or trebling the metal. We see in these views of Fig. 1 that the use of a filler block (or many such blocks) will elevate the female die to a position in line with the gaging fingers, or to a height of an adjusted stroke of the ram.

In light sheet metal forming such as is encountered in small cabinet work, movie projection equipment, radio, and variety sheet metal shop work, this 4-way female die will prove just the thing wanted. It can be used for a variety of bending work by turning up the female die for the opening that will best do the work, changing solely the male die as may best suit the operation. One of the openings in this die can be radial, for forming small "beads" as may be desired. The die may be procured in short lengths, and several of the lengths can be arranged end-to-end in the press brake, since the junctures of the pieces do not cause pronounced marks in the metal.

The several views grouped under Fig. 2 show a novel inset-seaming die arrangement that is adjustable to any width of seam and thickness of metal seamed. The arrangement is simple enough, and its utility is obvious in sheet metal shops doing work requiring sheets of metal to be securely seamed together. Full length sheets and shorter pieces of the sheets can be seamed by this arrangement. A standard flat die is used for descent upon the braked seam-widths of the sheet. This die, upon striking the braked metal, presses it down into the adjusted opening between the slidable angle and the gaging angle. This gaging angle can be shop-constructed and bolted to the gaging fingers or the gaging bar of the press brake. In the opening between the slidable side-angle and the gaging angle is inserted a strip of metal thick enough to permit four thicknesses of the seamed sheet to be compressed between the slidable angle and the gaging angle.

The gaging angle is adjusted for the "width" of flattened down seam, leaving enough margin for the metal to bend up over the gage for formation of the "inset". It will be seen in view 2, of this group, that the "hooked" edge of the one sheet is pulled or pushed forward against the protruding portion of the slidable angle, and that the "hook" of the second sheet is hooked into the first hooked sheet, and the two sheets held in this position are then struck by the descending "flat" die. The stroke of the flat die moves down the slidable angle, and the "seam" is flattened down and locked by the inset, all in one

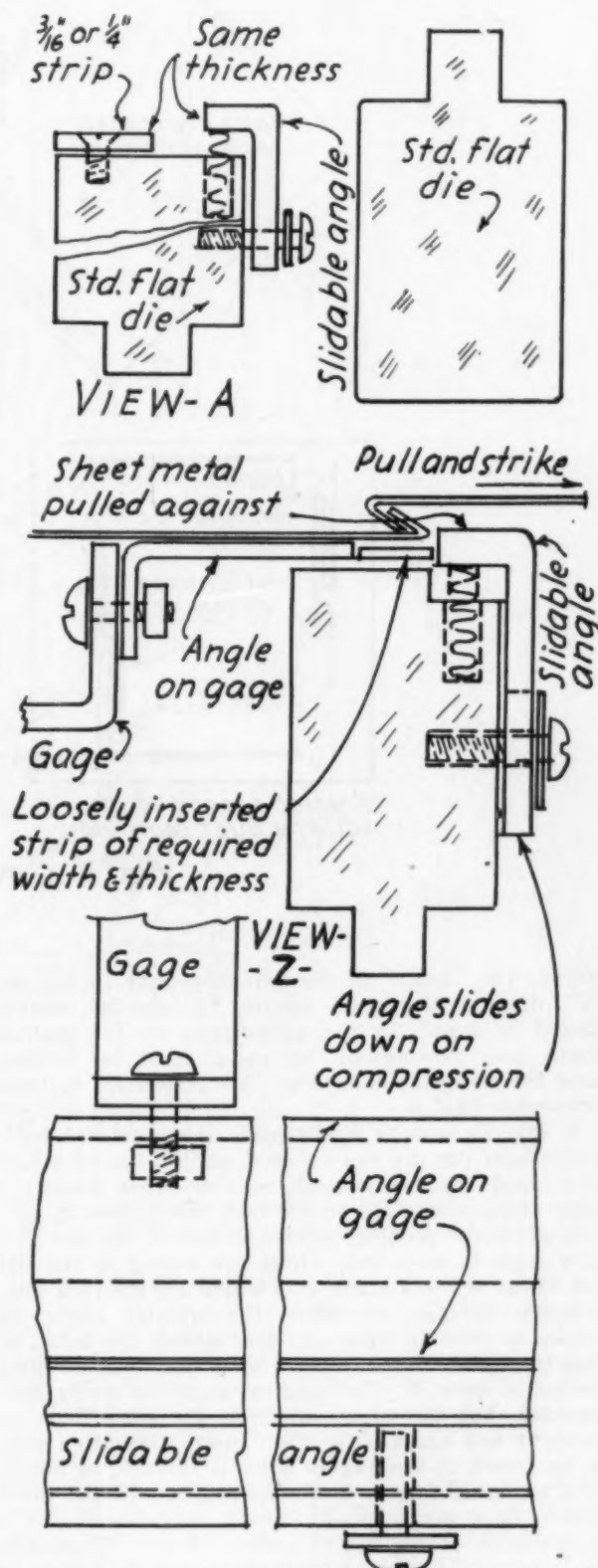


Fig.2 Insert Seaming (Adjustable)

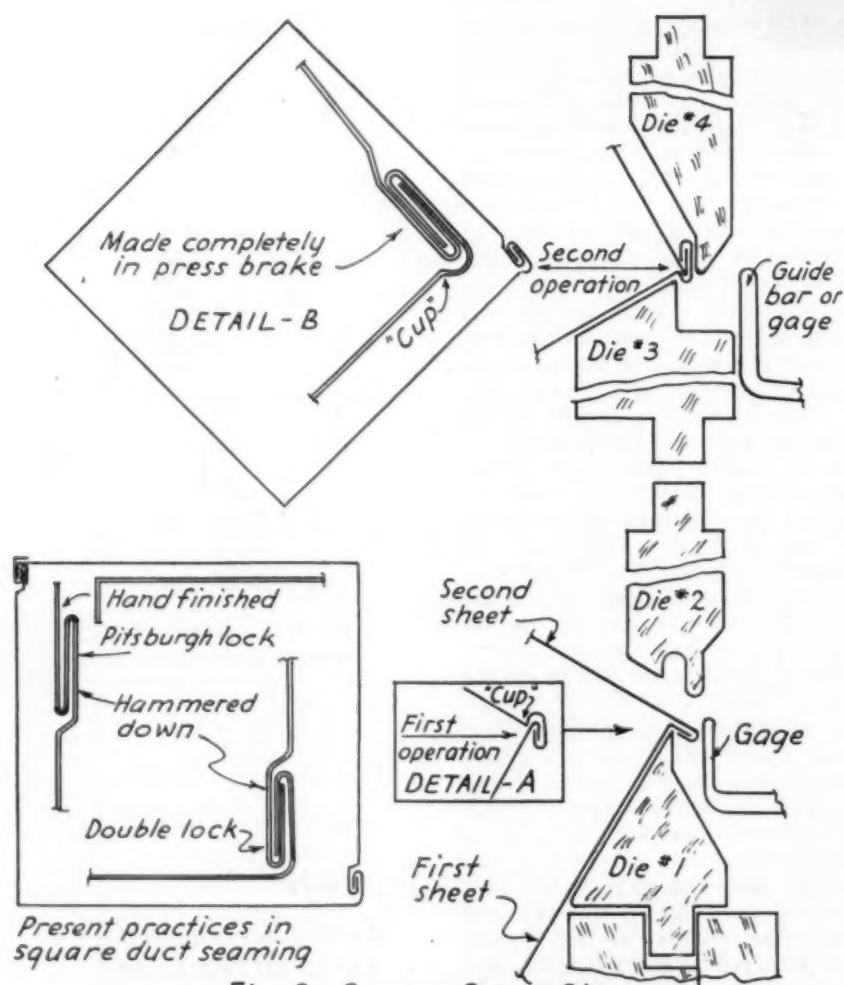


Fig. 3 - Corner Seam Dies

stroke. The "hooks" in the two sheets are formed by "V" dies in the press brake. "Air-bends" merely should be made. In the adjustment of the gaging angle, the "flowing-out" of metal must be figured, upon the air-bends flattening. (See American Artisan, September 1945.)

If this die is to be locally made (shop constructed), a standard flat die can be used, on the top of which is secured (by countersunk bolts or other means) a strip of metal of 3/16 or 1/4 inch thick, view A, providing for the opening, shown in view 2, for the slidable angle to move into. Holes are drilled in the flat die, about one foot apart, into which are inserted compression springs upholding the slidable angle, as shown in view A. This angle is slotted for bolts, so that it can move up-and-down upon the bolts, all illustrated in view A. The gaging angle is easily constructed, but the edge contacting the seam must be straight and adapted for the "inset" formation over it. Inasmuch as the gaging angle is movable by means of the gaging fingers or the gaging bar of the press brake, only one such die would be required for a multiplicity of widths of seams. Where large-scale seaming would be done by these means it would pay the shop to procure a machined and faultlessly working die of this make.

The above described "seaming-in-flat" on a press brake will get ready comprehension and approval from any sheet metal man who has been doing such seaming in the past, by more complicated means.

A more complicated and seemingly difficult seaming operation is presented in the drawings grouped under Fig. 3. Here are shown certain special dies by which it is possible to do corner-seaming of sheet metal formed into rectangular shapes, such as ducts. In the left hand lower view are depicted the prevailing present practices of seaming, the one being the "Pittsburgh" seam, and the other a standard "double" seam. Both of these seams require at least a partial hand finishing by hammer or mallet. In the double seam the hammering must be done over an underlying stake or bar, and on long pieces of ducts or other such formations, the seam is likely to slip from the bar, or bulge out or up. This happens especially in the "middle" of the long seam, where often the metal widens or slips out of lock and the seam is all but satisfactory. The tendency is general to get away from doing seaming by hand, and from applying hammers or mallets in closing the seam.

Die No. 1, in Fig. 3, is constructed to receive (and hold) upon its point a press brake-formed, 90 degrees braked first part of the seam, while a press brake-formed second (hooked) part of the seam is hooked over the first part, and held in position by the adjusted gaging angle. The adjusted descent of die No. 2, results in pressing down the seam over the point of die 1, and forming a "cup" in the sheet metal, as shown in Detail A, under "first operation". This "cup" formation locks the seam sufficiently well for the next operation, the duct being turned about so that the

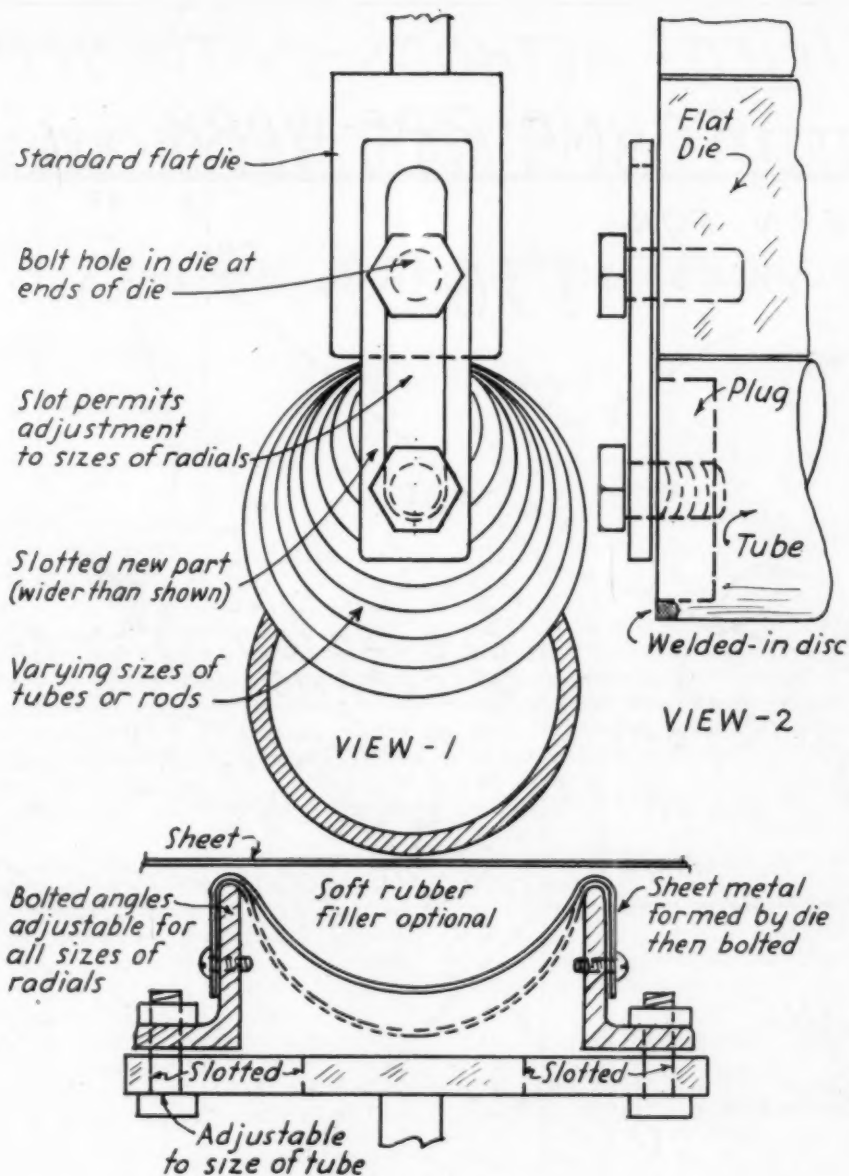


Fig. 4 Radial Forming Dies

"point" of the die No. 3 slides into the "cup" and holds the duct in position (supported outside of the brake as may be necessary), while die No. 4 closes the seam. Inasmuch as the action of the die No. 4 is here "off-center", it is advisable to use a strip of metal (an angle acting as a gage) secured to the side of die No. 3, so that the lower portion of the die No. 4 will be held by it against the working area of the die No. 3, without bulging away from it. This bulging would happen if we work heavier gauges of the sheet material in these dies, and the bar or angle would not hold the die No. 4 in position.

The action of descending die No. 4 upon the partially seamed sheet metal reposing upon the point of die No. 3, results in the seam closing, as shown in adjoining Detail B, View 3. The "cup" formation will diminish in the action, and in lighter gauges of sheet metal that portion of the sheet adjoining the seam will bulge upward, forming a partially "inset" seam. In air conditioning and other such ducts usually hidden from view, the cup-formation (Detail B) and the imperfect "inset" seam would not detract

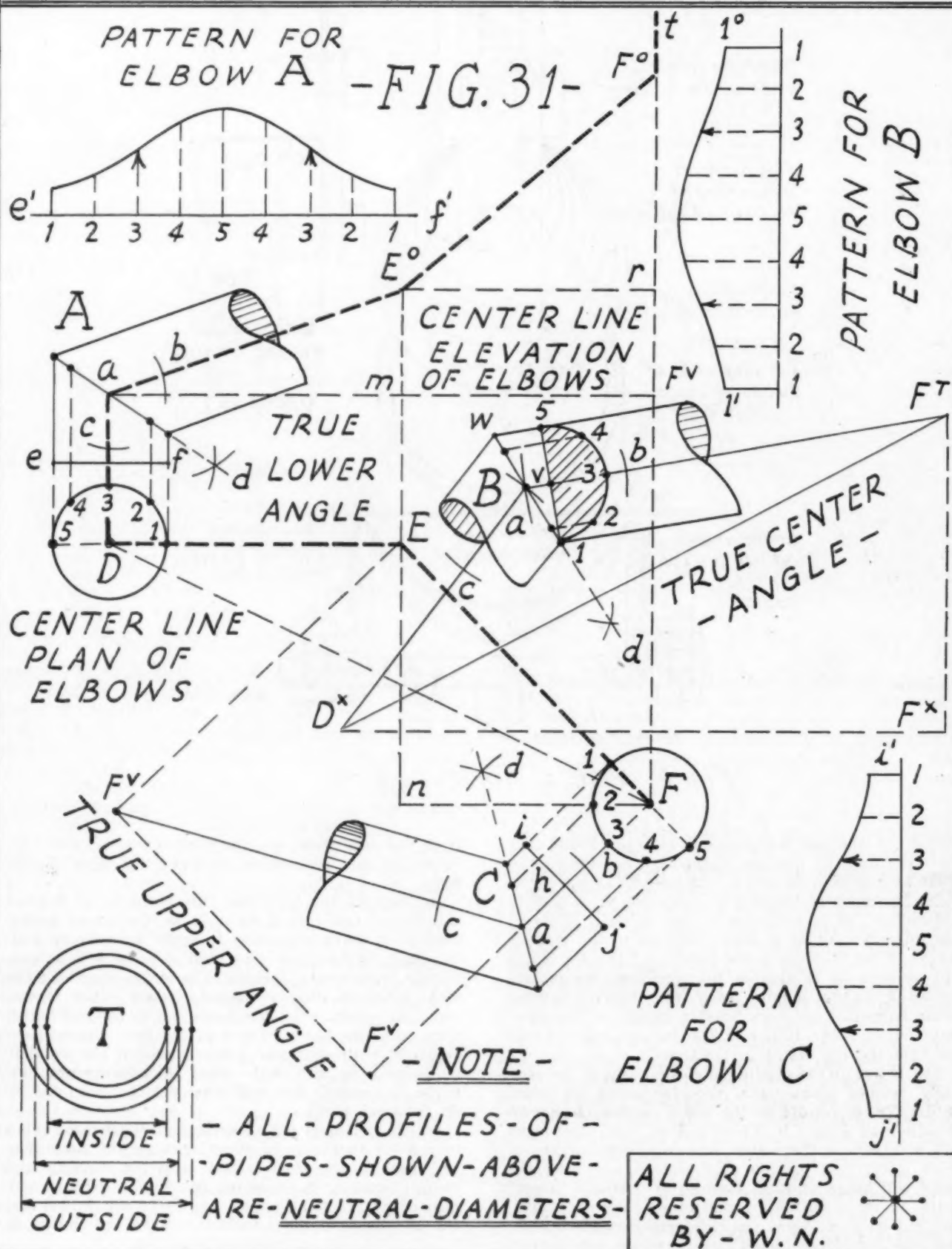
from the usefulness of this kind of seam. The cup-formation provides, rather, an additional "lock" to the seam.

In view of the fact that this seam is all formed and closed and locked securely in the press brake, without it being necessary to apply hammer or mallet; and, further, that this kind of seam will be uniformly smooth and "locking" the entire length of the duct, tube, or other rectangular sheet metal formation; its adoption by the trade might be considered. Obviously the manufacturer of the four dies will experiment with short and longer pieces of the metal to be seamed, as also with metal thicknesses practical to be so seamed, and will construct the four dies to do the work right.

In Fig. 4 is depicted an arrangement whereby tubes or rods of aluminum or other light weight metal may be used by the sheet metal shop for beading and radial forming. A standard flat die is used in any desired or practical length, and holes are drilled and threaded in the die's ends for bolts, as shown in

(Continued on page 148)

-SIMPLIFIED-METHODS-IN-TWISTED- IX — ROUND-PIPE-WORK —



Heavy Gauge Blow Pipe Fittings*

[Twisted Round Pipe Work]

By William Neubecker

NUMEROUS requests have been made for laying out the patterns for twisted round pipe work, showing the amount that one elbow must turn upon the other to obtain the required twist.

In this ninth article simplified methods in twisted round pipe work explain how the true angles are obtained and how the twists are made by the use of SLIP JOINTS without having recourse to geometrical projections. Problems will arise which require the use of twisted elbows. Sometimes the job is so small that it would not pay to develop the patterns by the geometrical projection method so as to find the amount of twist that one elbow would turn upon the other.

Very often these pipes are of extended lengths between the miter joints; therefore the elbows are made up separately and straight sections of pipes inserted between them, which procedure permits the adjustment of the elbows to their required angle positions. The following methods will also apply to shorter lengths between the miter joints.

Regardless what the distance between the miters may be, simply put in a lapped or telescoped slip joint and then twist or turn to the required position or angle. If, however, it is absolutely necessary to find the amount of twist (in short lengths of pipe) that one elbow will turn upon the other, it is necessary to use the principle of geometrical projections. This will be explained in a subsequent article.

The Problem

A typical twisted pipe problem solved by the simplified method, applicable to either long or short lengths between the miter joints of the elbows, using either lapped or telescoped slip joints is shown on the full-page drawing marked Fig. 31, which is to be constructed of 16 gauge galvanized iron. In this connection it is proper to say that in all heavy metal pipe work the NEUTRAL diameter must always be used in developing the pattern shapes. This is made clear in connection with diagram T at the lower left hand corner of the drawing, where the inside, NEUTRAL and outside diameters are shown. If the inside diameter of the pipe is to be 12 inches and 16 gauge sheet metal (which is 1/16 inch in thickness) is to be used, the NEUTRAL diameter would be $12 + 1/32 + 1/32$ or $12 \frac{1}{16}$ inches and the outside diameter would be $12 + 1/16 + 1/16$ or $12 \frac{1}{8}$ inches. When laying out work of this type it is only necessary to deal with the CENTER LINES of the elbow as shown DOTTED in the plan and elevation.

*All rights reserved.

Referring to the elevation, note that the center line starts with the vertical line $C-A$, then inclines from A to E° , having a rise equal to $m-E^\circ$, and continues at an incline from E° to F° , having a rise equal to $r-F^\circ$, from which point the line becomes vertical as indicated by $F^\circ-t$. Now following the construction lines projected to the plan below, note that the vertical line $C-A$ in elevation is indicated by the dot D in plan from which point the center line runs horizontally to meet the construction line projected from E° in elevation at E in plan. While the line $E^\circ-F^\circ$ in elevation rises as much as $r-F^\circ$, this same line in plan leans toward the reader a distance equal to $E-n$. From n a horizontal line is drawn to intersect the construction line projected from F° in elevation at the dot F , which represents the plan view of the line $F^\circ-t$ in elevation. Having drawn the dotted center lines of the elbows in both plan and elevation in their correct relative positions, the true angles are now in order.

Finding the True Angles

As the dotted line $D-E$ in plan lies on a horizontal plane, then will similar line $a-E^\circ$ in elevation show its true length and $E^\circ-a-c$ will be the true angle of the lower elbow. To find the true angle of the upper elbow in elevation proceed as follows: Parallel and equal to $E-F$ in plan draw the line E^v-F^v . At right angles to E^v-F^v from point F^v erect the line F^v-a equal to the vertical height $r-F^\circ$ in elevation. Draw a line from E^v to a in plan and extend the line F^v-a which will meet the center point F .

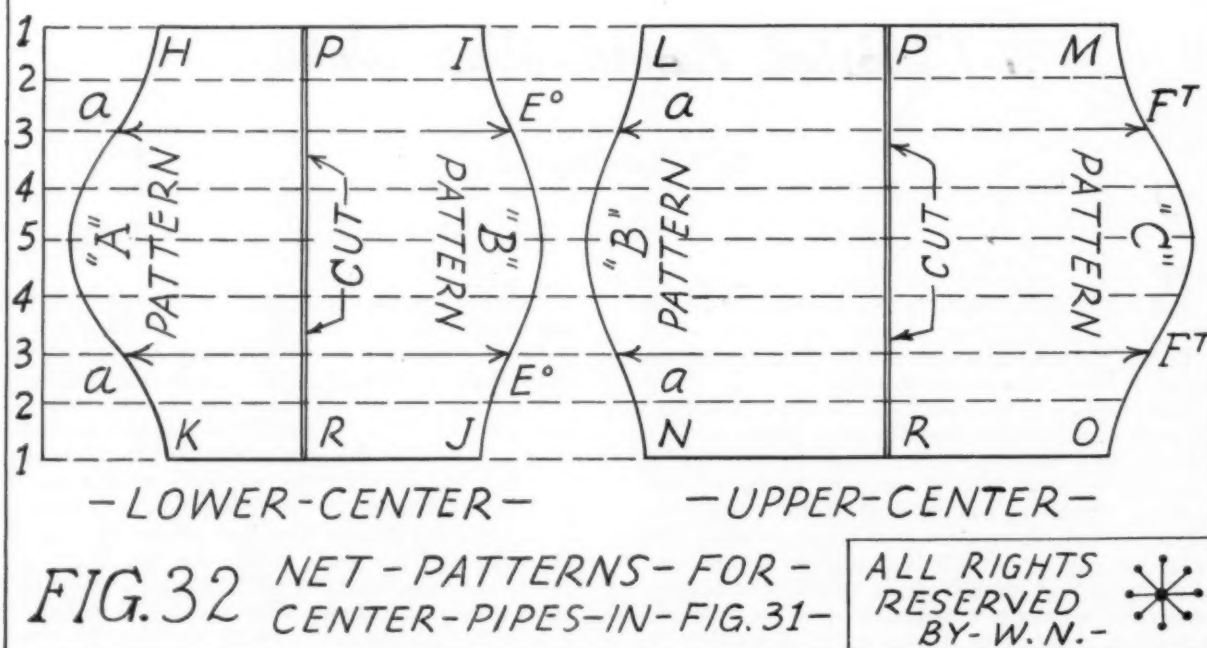
Then will $F-a-E^v$ be the true angle for the upper elbow. For want of space the drafting of the true center angle has been drawn partly over the plan and is found as follows: Take the distance from D to F in plan and place it on the horizontal line D^x-F^x . From F^x at right angles to D^x-F^x draw the line F^x-F^r equal to the combined vertical heights F^v-F° in elevation and draw a line from F^r to D^x which is the true distance from a to F° in elevation or D to F in plan.

Now take the true length of $a-E^\circ$ (in the true lower angle diagram) as radius and using D^x in the true center angle as center, draw a short arc near B which intersect by an arc struck from F^r as center, with a radius equal to the true length $a-E^v$ in the true upper angle diagram. Lines drawn from D^x to B to F^r will produce the true center angle.

Developing the Lower Elbow

First bisect the true lower angle using a as center

-SIMPLIFIED-METHODS-IN-TWISTED- IX a - ROUND-PIPE-WORK -



with any desired radius intersect the center dotted lines at *b* and *c*; with the same or any other radius using *b* and *c* as center intersect arcs at *d*. Now draw the miter line from *d* through *a* indefinitely. Using *D* as center draw the desired NEUTRAL section of the pipe and space one half in equal divisions as shown by the numbers 1 to 5, being careful always to start number 1 in the THROAT on this and other patterns which will follow.

From the divisions 1 to 5 erect vertical lines to intersect the miter line as shown. On any line as *e'-f'* in the upper left hand corner of the drawing place double the girth of the semi-section *D* as shown by the numbers 1 to 5 to 1 and draw the usual measuring lines at right angles to *e'-f'*. Now measuring in each instance from the line *e-f* in the true lower angle, take the various distances to the miter line and set them off in the pattern for elbow *A*, always measuring from the line *e'-f'*. Trace a line through points so obtained for the desired pattern shape. As the true lengths of the center lines of the elbows will always be in line with point 3 in the semi-section *D* (and other sections which will follow), then in laying out the full length patterns for the various pipes, all measurements will be laid out from intersections 3 on the miter cut, as indicated by the arrows in the pattern for elbow *A*, which will be fully described in connection with the other two elbows as we proceed.

Upper Elbow Pattern

Bisect the true upper angle and obtain the miter line as described in connection with the bisection of the true lower angle using similar center points as shown by the small letters *a-b-c* and *d* in the true upper angle. Using *F* as center draw the required

NEUTRAL section of the pipe and space one half in equal divisions as shown from 1 to 5 (placing point 1 in the throat). Project the points 1 to 5 to intersect the miter line as shown and make the distance *a-h* equal to *F°-t* in elevation. Place double the girth of the semi-section *F* (1 to 5) on the vertical line *i'-j'* at the lower right and proceed to lay out the pattern in the usual manner.

Measure in each instance from the line *i-j* to the various intersections on the miter line in the true upper angle and place these distances on the pattern for elbow *C* at the lower right and mark the measuring lines with arrow points on line 3.

The Center Elbow Pattern

Bisect the true center angle and obtain the miter line as described in connection with the true lower angle, using similar center points as shown by the small letters *a-b-c* and *d* in the true center angle. Using *v* as a center point, draw the required semi-NEUTRAL section which divides in equal divisions as shown from 1 to 5, being careful to place point 1 in the throat. From these divisions draw lines parallel to *a-F°* to intersect the miter line *7-w* as shown.

Now place double the girth of this semi-NEUTRAL section on the vertical line 1-1 in the upper right hand corner of the drawing as shown from 1 to 5 to 1. From these points at right angles to 1-1 draw lines indefinitely as shown.

At pleasure parallel to 1-1 draw the line 1°-1'. Now measuring from the line 1-5 in the true center angle, take the various distances to the intersection on the miter line 1-w and place them on the pattern for elbow *B* at the upper right, measuring in each instance from the line 1°-1'. Trace the curved line through points

so obtained, which will be the miter pattern for the center elbow B. Mark the measuring lines with arrow points on line 3.

Full Length Patterns for Center Pipes

This is shown in Fig. 32 where the girth 1 to 5 to 1 equals the girth of the various elbow patterns which were developed in Fig. 31. Now to lay out the full length patterns of the LOWER center pipe shown in the center line elevation in Fig. 31 from a to E° (which is more clearly shown in the perspective view in Fig. 33 from A to B) take the pattern for elbow A in Fig. 31 and reproduce it as shown in Fig. 32 from H to K. From the true lower angle in Fig. 31 obtain the true length of this lower center pipe $a-E^\circ$ and set it off in Fig. 32 on the measuring lines drawn from 3 on both sides, from a to E° . Now take the pattern for elbow B in Fig. 31 and set the arrow points on E° and E° in Fig. 32 and reproduce the miter cut shown from I to J. Then will H-I-J-K be the full length net pattern shape for the lower center pipe A-B in the perspective view in Fig. 33.

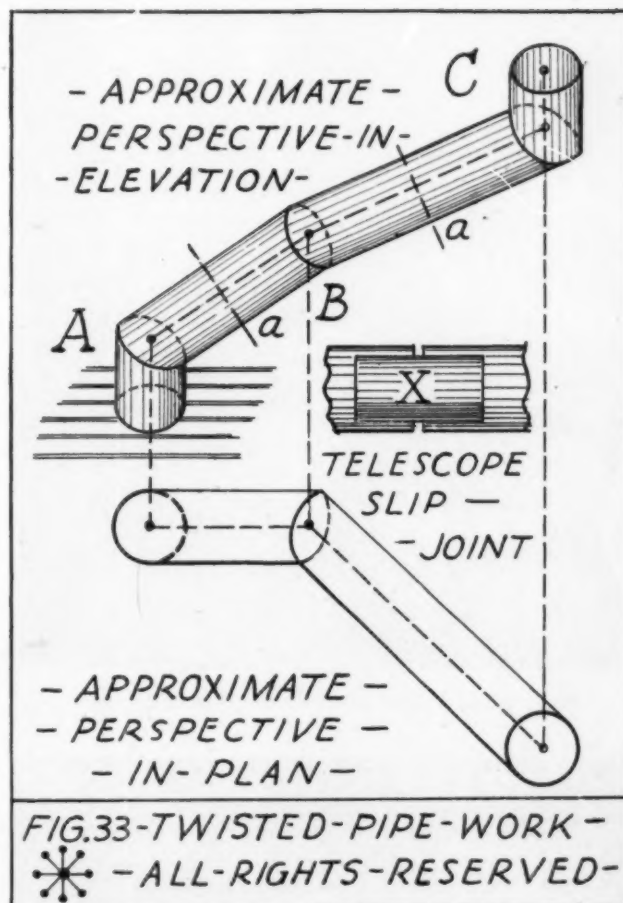
To lay out the full length pattern for the UPPER center pipe shown in the center line elevation in Fig. 31 from E° to F° (which is more clearly shown in the perspective view in Fig. 33 from B to C) take the pattern for elbow B in Fig. 31 and reproduce it as shown in Fig. 32 from N to L. From the true center angle in Fig. 31 obtain the true length of this upper center pipe $a-F^\circ$ and set it off in Fig. 32 on the measuring lines drawn from 3 on both sides, from a to F° .

Now take the pattern for elbow C in Fig. 31 and set the arrow points on F° and F° in Fig. 32 and reproduce the miter cut shown from M to O. Then will L-M-N-O be the full length net pattern shape for the upper center pipe B-C shown in the perspective view in Fig. 33.

To avoid complicated geometrical projection drawings for finding the amount of twist that one elbow will turn upon the other, slip joints will be employed. Therefore in the lower and upper center pipe patterns in Fig. 32 divide the length of both patterns in two equal parts and cut through on the line P-R in both patterns, thus making each pattern in two parts.

Assembling the Elbows

When assembling the three elbows A-B and C shown in the perspective view in Fig. 33, join the pattern for elbow A in Fig. 31 to the A pattern H-K-R-P in Fig. 32 to make up the elbow marked A in both Figs. 31 and 33. In a similar manner join the two B patterns I-J-R-P and L-N-R-P in Fig. 32 to make up the elbow



marked B in both Figs. 31 and 33. Finally join the pattern for elbow C in Fig. 31 to the C pattern P-R-O-M in Fig. 32 to make up the elbow marked C in both Figs. 31 and 32.

Applying the Slip Joints

After the elbows are made up, telescoped slip joints, as shown in diagram X in Fig. 33, are inserted in the cross joints indicated by A-A in the perspective view. The sleeve X should fit snug and tight. When all the elbows are connected, the slip joints permit the adjustment of the elbows to their required angular positions, after which the cross joints are secured with three or four round head sheet metal screws.

Partnership Or Corporation

(Continued from page 77)

both as to the classes and the amounts of expenditure. But any one who under takes to construct hypothetical federal budgets that run to totals above \$15 billion will find it necessary, in order to arrive at his totals, to bring in various aids, grants, subsidies and the like. It is impossible to make a sensible case for the cost of the truly essential or necessary services of the federal government that will exceed \$15 billion. And, as illustrated above, some atrocious padding becomes necessary to arrive at a \$25 billion total. It stands to reason that if taxes are moderate and the people generally are prosperous there will be less need,

or no need at all, for the extras that produce such an inflated total.

News Summary

(Continued from page 79)

new homes is an impossible one administratively, and that actual building progress would be much hampered if this were attempted. Their objection here, however, is not too realistic, for OPA could base ceilings on FHA appraisals, which in most cases are being made anyway.

Incidentally, FHA will also appraise old houses for the \$10 fee whether or not FHA insurance is contemplated.

Shop Saves Time and Material With Welded Fabrication

*Photographs courtesy of
the Lincoln Electric Company,
Cleveland*



Fig. 1—Elbows fabricated by the electric arc welding process.



Fig. 2—Exhaust stacks like the one shown are welded from 14-gauge 18-8 stainless steel.



Fig. 3—These flour hoppers for bakery use are 16-gauge stainless steel.

NUMEROUS interesting examples of the use of electric arc welding in the fabrication of equipment from black iron, galvanized iron, and stainless steel of 18-gauge and thinner are reported by the Valley Cornice and Slate Co., Ltd., Saginaw, Michigan.

For instance, in the fabrication of elbows, the technique employed, according to Lewis Weigand, superintendent, is to butt weld the sections into rings and to draw the edges with hammer and dolly. (Fig. 1). A smooth lap joint containing a lap of about $\frac{3}{8}$ -inch is obtained by a method of forming and tapering which calls for drawing the outside edge of one section while the engaging edge of the next section is left straight. The inside edge of the latter section is then drawn while the inside edge of the engaging section is left straight.

These elbows are 12 inches in diameter and are fabricated from 14-gauge galvanized iron. The metal is welded with $\frac{1}{8}$ -inch A.W.S. E-6010 electrode.

Another interesting job was the fabrication of an exhaust stack of 14-gauge 18-8 stainless steel. The connections are 56 inches long and joint a 43-inch by 54-inch breeching to a 54-inch round stack. The only material available for this job were 48-inch by 120-inch sheets so the smaller triangular sections had to be welded. (Fig. 2.) All the joints are butt welds, welded on one side with $\frac{1}{8}$ -inch electrode specially designed for welding stainless steel.

The company also makes flour hoppers from 16-gauge stainless steel for bakery use. These hoppers are 28 inches high and the bottom is 40 inches by $7\frac{1}{8}$ -inches. The top is 12 inches in diameter. The hopper is used between a screening and a mixer and accomplishes the work of a flour sifter. All butt joints are welded with $\frac{1}{8}$ -inch electrodes specially designed for welding stainless steel. (Fig. 3.)

In the fabrication of an air-duct section from 18-gauge galvanized iron, a $\frac{1}{8}$ -inch A.W.S. E-6010 electrode is used. The cross-sections, which are 46 inches by 46 inches, are made from sheets 36 inches long and they are turned on edge to provide a means of installing and to increase rigidity. The corner joints are welded by tacking them every two inches. The ends are tacked first and then the completed weld is made by slanting the joint about 45 degrees to provide the maximum welding speed. (Fig. 4.) Similar jobs of air-duct welding are shown in Figs. 5 and 6.

Scores of other miscellaneous jobs in which the shielded arc process is used by this shop, include the fabrication of pipe as seen in Fig. 7.



Fig. 4—Maximum welding speed is attained in the fabrication of this 46 by 46-inch air-duct section, made by 18-gauge galvanized iron, by first tack welding every two inches and then slanting the joint to about 45 degrees.



Fig. 6—Completing the tack welding of the 18-gauge air duct section shown in Figs. 4 and 5. For finish welding, the corner joints are welded downhill about 45 degrees for maximum speed.



Fig. 5—Tacking one end of the corner joint of the 18-gauge air duct section shown in Fig. 4.



Fig. 7—Fabricating a 36-inch long, 12-inch diameter section of pipe from 12 gauge galvanized iron. The joint is butt-welded with an A.W.S. E-6010 electrode of $\frac{1}{8}$ -inch.

Three-Way Dish Washing Sinks

Made to Health Board Order

By George H. Watson

MORE than 100 eating places in Birmingham, Ala., have in recent months installed three-process dish washing and sterilizing equipment as required by a municipal ordinance adopted by the Bureau of Food and Dairy Inspection of the Jefferson County Board of Health.

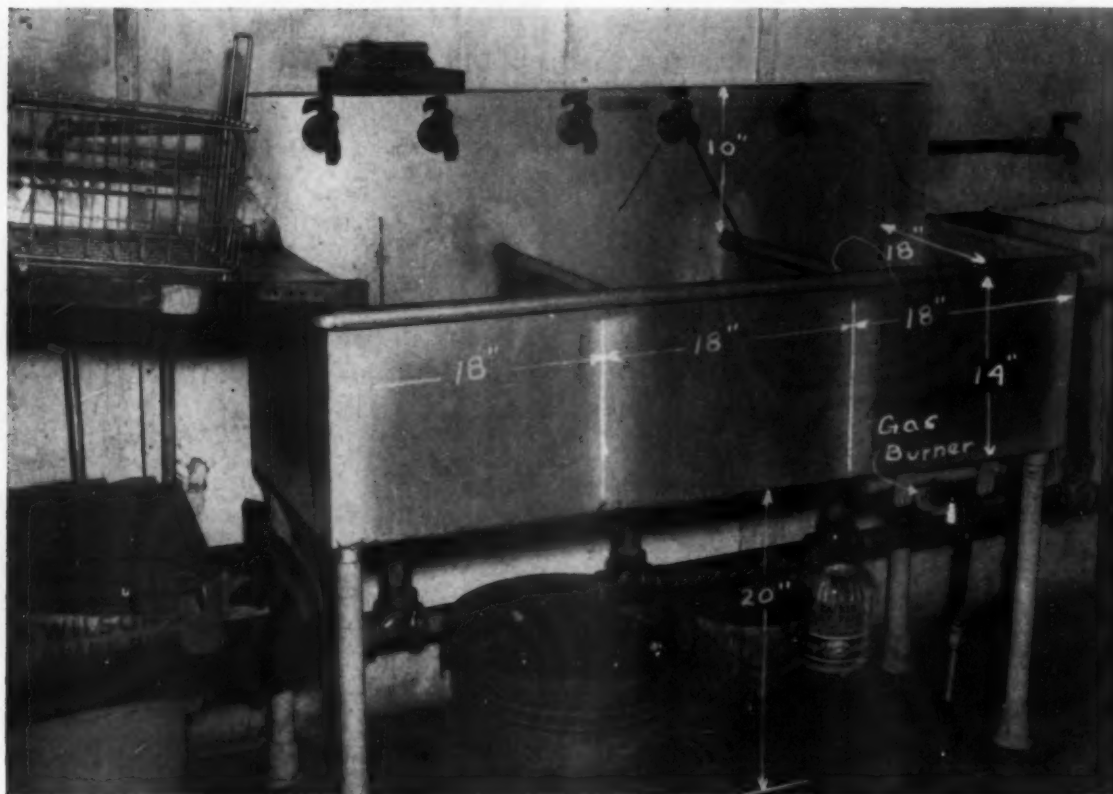
The equipment, as required in places not having automatic dish washers, is made of heavy galvanized iron (16 gauge or heavier) with iron angle legs. It has three sinks with necessary drain boards. One of the sinks has 120 degree water for washing, another 140 degree water for rinsing and the third 170 degree water for sterilizing.

Temperature in the third or sterilizing sink is stepped up to the 170 degree temperature by a dual gas burner directly under it. The gas burner is made

from two lengths of $\frac{3}{4}$ -inch pipe, each with 28 holes and capped at 12 inches. This sink is also equipped with an angle thermometer, so there is no guesswork as to the temperature of the water.

The three-way equipment, most of which has been made in local sheet metal shops, has a 10-inch splash-board in the rear, and also includes a dip basket. Dishes are placed in the latter after being washed and then dipped into the rinsing sink and finally into the sterilizing sink.

According to officials of the health department, dishes or glasses put through the three-way process are made absolutely clean and free of germs. The process removes all odors and stains including lipstick. Several other cities have asked for specifications for this equipment.





Cold water pouring into a heated copper gutter during test in the Revere Laboratory

WE USED HEAT TO GET

"Light"

This photograph, of an experimental copper gutter being tested in the Revere Laboratory, was taken by light that was mostly heat. For the kind of light Revere was seeking in this research was information, knowledge, understanding—that we could pass on to you.

To get it, we had to bring the sun indoors, or at least its summer heat. Also sudden rainstorms, to create a temperature range of 160°. And put under them a typical sheet copper gutter such as any skilled worker might install on a building. Then we could see what happens when cold rain hits sun-baked copper, could measure any movement in the metal—could, in short, find out why sheet copper construction sometimes fails, even when materials, design and workmanship all appear virtually perfect. From these and other Revere tests came the application to sheet metal construction of the basic but simple principle of columnar strength—from which we have worked out new data and methods that reduce this type of construction to a matter of engineering design.

All these facts are fully covered in the new Revere booklet, "Copper and Common Sense." To be sure of receiving a free copy, write today to the Revere Executive Offices. Revere materials are handled by Revere Distributors everywhere. For help in difficult problems, call on the Revere Technical Advisory Service, Architectural.

REVERE

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For Double Protection Against Rust Use ZINC!

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First, by simple coverage, with a sheath of rust-resistant metal.

Second, by electro-chemical action, or "sacrificial corrosion"

Stop Rust! Cut Costs!

Save Materials! . . . with ZINC!

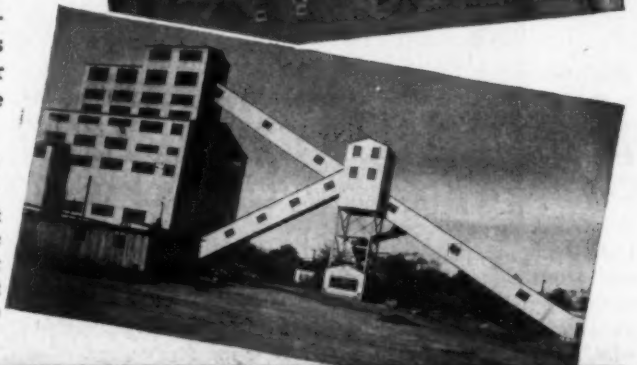
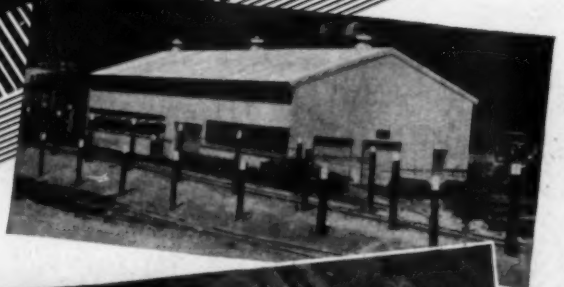
Buildings, equipment, machinery — in all of them the use of zinc for protection against rust is good engineering and sensible economy. Zinc can be applied by hot-dip galvanizing, electro-plating, sherardizing, or as a metallic pigment; all these methods are sound and practical for various applications... And specify *heavy* coatings, for the heavier the zinc coating, the better the protection, the longer the service life, and the lower the cost.

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ASSOCIATION ACTIVITIES



Sheet Metal Contractors' National Association

The officers and board of directors of the Sheet Metal Contractors' National Association held a two-day meeting in Chicago December 1st and 2nd. Several important association matters were discussed in detail and certain problems which have arisen since the last meeting were discussed and decided upon.

A tentative program was laid out for the annual convention which will be held in St. Louis, at the Statler Hotel, the end of April and the first of May. Complete announcement of the program and the dates will be made just as soon as all arrangements have been made.

At the last annual convention, a committee was appointed under the chairmanship of J. E. Merrick, Louisville, Ky., to distribute to all architects and general contractors a copy of the "Bid Peddling Resolution" which has been explained in detail in association reports. The committee said that as much distribution had been made as possible and individual officers of the association and members of the committee have discussed the resolution with local chapters of the A. I. A., and A. G. C. A. The committee recommended and the officers accepted a recommendation to obtain a list of all 93 officers of the Associated General Contractors of America and an effort will be made during the coming week to get this resolution in the hands of all these officers. In addition, support will be asked from other subcontracting trades who have already or who will shortly initiate programs condemning bid peddling. It is hoped that by the time of the annual convention the committee will be able to report some definite acceptances or will be in a position to revise its program to obtain acceptance of the bid-peddling resolution.

The Publicity and Membership Committee reported that as a result of letters which are being mailed to some 6,000 prospects all over the United States the membership in the association is climbing slowly. It is expected that by the time of the annual convention at least 1,000 members will belong to the association. The letters which have been mailed and which are going in the mail now have stimulated a great deal of interest, the committee reported. The committee and officers are receiving letters from individuals and from groups expressing interest in the association and asking for help in organizing a local association or obtaining membership in the national association. In order to give such individuals or groups a complete outline of the association's program and activities, the publicity and membership committee have prepared a very elaborate brochure which gives the association plans, plus a complete explanation of the plan, plus a resume of what the association has done to date and how it is working on certain activities. This brochure will be ready for mailing shortly and it is expected a copy will be placed in the hands of every known local or state association secretary within the next thirty days.

The secretary and treasurer reported the financial condition of the association is exceedingly healthy. The bank balance is very substantial and there seems every indication that there will be ample funds to carry on the association planned program.

The apprenticeship training committee, under Chairman Frank Kramer, Milwaukee, has continued to gather copies of existing apprenticeship training programs and

standards and is studying such standards for the purpose of revising, if necessary, the association recommended apprenticeship training program. This association apprenticeship training program is at present the backbone of the Federal Apprenticeship Training Program.

It was recommended that the association give some attention to the problem of changing building codes or heating ordinances or convincing building departments that warm air furnaces are not hazardous to health when installed in buildings having more than one family occupancy. Certain communities now prohibit the installation of such systems on the basis that should a communicable disease arise in one apartment, this central warm air heating system will communicate the disease. In some other communities ordinances prohibiting this practice are in existence but are not being enforced. The association proposes to enlist the assistance of certain manufacturers and agencies interested in this subject and determine if certain data can be compiled showing that warm air furnace systems are not hazardous in multi-family buildings.

Coming Conventions and Meetings

1946

Jan. 28-30—Council of the American Society of Heating and Ventilating Engineers. 52nd Annual. Hotel Commodore, New York City. A. V. Hutchinson, Secy., New York City 10.

Feb. 4-5—Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc. Annual. Antler Hotel, Indianapolis. Homer Selch, Secy., 946 Hosbrook, Indianapolis 3.

Feb. 18-19—Sheet Metal Contractors' Association of Wisconsin, Inc. 31st Annual. Schroeder Hotel, Milwaukee. Paul L. Biersach, Secy., 225 E. Michigan, Milwaukee 2.

Mar. 18-20—Michigan Sheet Metal, Heating & Air Conditioning Contractors' Assn. Convention. Pantlind Hotel, Grand Rapids. N. J. Biddle, Secy., Detroit 2.

Mar. 18-21—Michigan State College Short Course. Fifteenth Annual. Elementary and Advanced. Lorin G. Miller, Head, Dept. M. E., East Lansing.

April 2-3—New York State Sheet Metal, Roofing and Air Conditioning Contractors' Association, Inc. Annual. Hotel Statler, Buffalo. Clarence J. Meyer, State Secy., 567 Genesee St., Buffalo 4.

Apr. 8-9—Illinois Sheet Metal Contractors' Assn., Jefferson Hotel, Peoria. W. Rex Shaw, Secy., 695 E. State St., Jacksonville.

Apr. 15—Syracuse University Short Course. Syracuse University, Syracuse, N. Y. National Warm Air Heating and Air Conditioning Assn., 145 Public Square, Cleveland 14, Ohio. George Boeddener, Man. Dir.

May 2-4—Sheet Metal Contractors' National Association, Inc. Convention. Hotel Statler, St. Louis. Clarence J. Meyer, Natl. Secy., Buffalo 4.

Association Activities . . .

NWAH&ACA Program

The National Warm Air Heating and Air Conditioning Association is beginning an activity which will be a part of their service to dealers in connection with their advertising and dealer training and educational program. George Boeddener, Managing Director, suggests that readers copy the following and take it to their local newspaper for publication:

Old Romans Had Cold Feet

When Nero "fiddled" while Rome burned, he wasn't doing it just to keep warm! But as a matter of fact the old Romans got rather chilly occasionally. Believe it or not the up-to-date homes of that day had furnaces of a kind.

The industrious Romans, incidentally, made many improvements in heating. In 100 B.C. they invented the Hypocaust. This contrivance consisted of a basement room in which fuel was burned. Clay pipes led up inside the walls to the upper floors. Vents in the walls released the warm air just as our modern registers do. The Romans, however, were not so commonplace with their devices: how would you like a warm air register in the form of a lion's head, whose gaping jaws exhale heated air into your living room? Might be quite disconcerting to find one in a dark corner!

Along with their artwork, though, the ancients had their technical troubles. The soot and poisonous gases travelled along with the heat. Today a modern winter air conditioning system, also known as forced warm air heating, gives you automatically controlled temperature plus clean, comfortable, pure air by the use of air filters and humidifiers. It can even include an ultra-violet lamp to kill air-borne germs and virus.

This is not the only home heating convenience 20th century research has provided us. A modern winter air conditioning system by the use of a blower attached to the furnace propels the warmth wherever you want it—in the basement recreation rooms, other isolated rooms, hallways, even an attached garage. A gentle motion of the air keeps the house properly ventilated and dissipates a stale atmosphere and undesirable odors. Your family can enjoy genuine indoor comfort day in and day out—thru the use of a winter air conditioning system.

Carolina

Directors of The Carolinas Roofing and Sheet Metal Contractors' Association met on October 4 at the Barringer Hotel, Charlotte. President L. K. Flynt presided. All committees were represented except the Sick and Welfare Committee.

Chairman Averett of the Membership Committee urged members to send him new names to be added to the membership prospect list to be circularized.

Chairman Bowles of the Architect Committee called upon the entire membership to send him instances of unfair specifications in order that he may present them to the American Institute of Architects who are revamping their standard specifications. One objectionable item aired was railroads who require ten-year guarantees by roofers, but who establish their own inspectors as full and final authority without recourse. Others were holding roofers responsible for damage to contents of building; holding roofers responsible for low places in decking; specifying duct work under "Roofing and Sheet Metal" and grilles under some other head; failure to specify thru-wall flashing.

Chairman Piper of the Emblem and Sign Committee explained two new advertising ideas—a blotter and a scratch pad with association emblem and contractor's advertisement.

North Carolina Chairman Baker and South Carolina Chairman DeLay were instructed to keep their ears to the ground and report developments of the OPA in their

endeavors to get the cooperation of the industry to hold the line on prices.

Several members reported favorably on returned Veterans tried out under the G. I. Bill of Rights. Veterans are available for both roofing and sheet metal trades. The Government pays them \$50 a month—\$75 to married men—and allows up to \$50 for tools. V. E. Bell of Durham starts them at 50 cents per hour, but advises that the total could not exceed journeyman pay. Those interested may write Clarence Beddingfield, Department of Labor, Raleigh, North Carolina; or Mr. Suydam, U. S. Employment Service, Industrial Division, Columbia, S. C. Employers have to be certified by State Board of Education, who will pass on Employers' Facility and Ability to give proper training.

Joe H. Piper, Greenville, was appointed chairman of a committee to include Prentiss Baker and Gordon Waters to develop a Merit Badge Pamphlet on roofing for Boy Scouts of America.

North Carolina Chairman V. E. Bell of the Insurance Committee reported comparison showed North Carolina's Workmen's Compensation rates satisfactory. South Carolina Committee reported South Carolina rates still very unsatisfactory, with no relief in sight. Earl DeLay was instructed to call on Insurance Commissioner Murphy in Columbia and report findings at next regular meeting.

J. A. Piper, new editor of "The Carolinas Roofer," stressed the necessity of fullest cooperation of not only the Magazine Committee, but entire membership for news in the form of bulletins. Articles by members will be featured. Architectural and Engineering building hints on thru-wall flashing, methods of feather edging insulation of cotton mill overhangs and slate drips under unguttered monitor eaves will also be used and a question and answer column.

President Flynt expressed the necessity for a Labor Relations Committee. The importance of the committee was discussed and met with unanimous approval. Vic King was instructed to lay the ground work for this Committee and be prepared to receive chairman appointment.

Editor Piper feels that the association should continue affiliation with both the United Roofing Contractors Association and the Sheet Metal Contractors National Association and help make these bigger and better organizations.

Milwaukee

The Milwaukee Sheet Metal Contractors Association, Inc., held a lively and interesting election on December 4, with the result that the following Board of Directors was elected to serve for the year 1946:

Joseph Bauer of Bauer & Ward Sheet Metal Works
Walter Belau, Super Steel Products Co.
Al. Deller, Industrial Sheet Metal Works Co.
O. A. Hoffmann, Biersach & Niedermeyer Co.
Frank Kramer, Kramer Sheet Metal & Roofing Co.
Erv Langer, F. J. A. Christianson Roofing Co.
Edward Speeter, Standard Sheet Metal Works
A. Podolske, Milwaukee Metal Products Co.
Robert Schomann, Reinke and Schomann, Inc.

Immediately thereafter the newly elected members of the Board of Directors met and elected the following officers for the ensuing year:

President—Edward Speeter
Vice Pres.—Erv Langer
Secretary—Robert Schomann
Treasurer—Frank Kramer
Sgt.-at-Arms—Louis Stefanik
Exec. Secretary—Paul L. Biersach

Good fellowship and cards reigned after the meeting. Refreshments were served.

Paul L. Biersach, Secy.

Wisconsin

The Sheet Metal Contractors Association of Wisconsin, Inc., will hold their 31st annual convention on Monday and Tuesday, February 18 and 19, 1946, at the Schroeder Hotel.

A splendid program—primarily educational and secondarily entertaining—with fine sessions, prominent speakers, and splendid entertainment has been arranged.

Paul L. Biersach, Secy.

Equipment Developments

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 134 and mail to us.

△ Indicates manufacturer not listed in 1945 Directory.
● Indicates product not listed in 1945 Directory.

77—Electrode Holders



Tweco Products Company, English at Ida, Wichita 7, Kansas, announces a new line of air-cooled Tweco carbon electrode holders for manual welding, including four sizes—150, 200, 300 and 500-ampere models. Positive "Hol-Grip" design with ample length and ventilation are features.

The 150 and 200 ampere holders are furnished optionally with or without special "Quick-Attach" whip cables

for short duration jobs.

78—Fleet-Arc Jr

The Lincoln Electric Company, Cleveland 1, Ohio, offers a new low-priced welder which is ideal for rural power lines.

The new unit—Fleet-Arc Jr.—is for 230 volt, single phase power lines and meets the limited input require-



ments of rural utilities and REA by a design of high efficiency and high power factor. It has a maximum input current of 35 amperes and provides a machine which meets the new

NEMA standards for this type of welder. It can be used with the standard 3-KVA power transformer provided by the power company. Current range is from 20 amperes at 20 volts to 180 amperes at 25 volts welding duty. This gives sufficient capacity for all types of jobs found on most farms or job welding shops. It will handle electrodes ranging from 1/16 in. to 5/32 in. diameter.

The Fleet-Arc Jr. inaugurates a revolutionary development known as the Arc Booster which provides quick, easy arc starting. The instant the electrode touches the work, the welding current is given a boost of intensity for starting the arc.

Either of the two degrees of arc boosting provided is selected by a snap switch, one for general work and the other lower amount for thin material such as automobile fenders.

79—Airtron

Arrowhead Rubber Company, Dept. B-48, 2244 E. 37th Street, Los Angeles 11, Calif., offers Airtron as a ducting for hot or cold air. Made of glass cloth and rubber, it provides high insulation qualities as well as flexibility.

Airtron withstands temperatures from minus 60 degrees F. to 300 de-

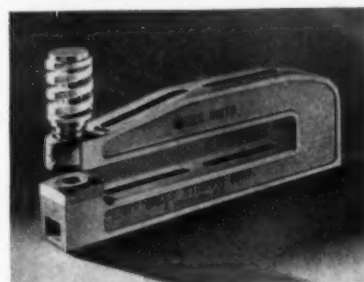


grees F. without a change in properties and will stand well over 50 pounds per square inch internal pressure at all temperatures. It is unaffected by air, light, water, gasoline, oil and all but concentrated mineral acids. Manufactured in tubes from 1 inch to 6 inches in diameter and in any length desired, as well as in specialized shapes.

80—Hole Punching Units

Wales-Strippit Corporation, 345 Payne Avenue, North Tonawanda, N. Y., announces the Wales heavy-duty Type BJ hole punching unit with rated capacity for punching holes in metal more than 3/8-inch thick.

Each unit consists of a holder that carries the punch, die and stripping mechanism.



Set-ups are made on T-slotted plates or templates for stamping presses and on rails for press brakes.

Type BJ units are available in 3 holder widths with maximum punch diameter of 3/4 inch for use with metal up to 3/4-inch thick.

81—Soldering Flux

Superior Flux Company, Public Square Building, Cleveland 13, announces a new organic soft solder flux, known as Superior No. 30 Super-safe Soft Solder Liquid Flux.

Because of its activity in effecting the wetting of the joining surfaces, this flux, in many cases, contributes to easier soft soldering of metal combinations which have been considered difficult to solder.

Another advantage in many soldering operations, as on electrical equipment, is the complete absence of injurious deposit at the joint. The effective acid action of the flux as it comes from the container, is completely neutralized at ordinary soldering temperatures, when properly used, leaving a residue that is normally noncorrosive, nonconductive to electricity, nonhygroscopic and easily soluble in water.

This new flux is not offered as a general substitute for the commonly used zinc chloride fluxes, but is recommended particularly for applications where rosin-alcohol is unsatisfactory or where zinc chloride or similar strong acid fluxes cannot be used because of the corrosion factor. It may be used in soldering copper, steel, silver, brass, various alloys and electroplated parts such as nickel plate, silver plate and cadmium plate.

Equipment Developments.

For your convenience in obtaining copies of new literature use the coupon on page 134.

82—Thinweld Attachment

The Hobart Brothers Co., Hobart Square, Troy 1, Ohio, announces a new 3-step Thinweld attachment that gives wider range to standard arc welding machines and makes it possible to weld from 10 amperes up through the maximum rating of the welding machine without any dead spots in the complete welding range.

The No. 413 Thinweld attachment is furnished with a 3-foot cable which



THINWELD ATTACHMENT

is connected to the ground terminal of the welding machine and the ground lead is connected in turn to the wing nut on the Thinweld.

83—Plastipitch

Koppers Company, Inc., Tar and Chemical Division, Pittsburgh 19, has developed "Plastipitch", a protected metal for roofing and siding on industrial and agricultural buildings.

The product consists of flat, corrugated or V-crimp steel sheets the surfaces and edges of which have been treated with "Plastipitch," a compound which Koppers has perfected. It provides permanent adherence to metal at low as well as high atmospheric temperatures and thoroughly protects the base from rusting, corrosion, salt air and the effects of chemical fumes present in many areas.

Besides roofing and siding the material is suitable for gutters, ventilators, flashings, ducts, etc.

The sheets can be fabricated without special equipment and can be bent without impairing the coating because of its toughness and elasticity.

84—Foamglas

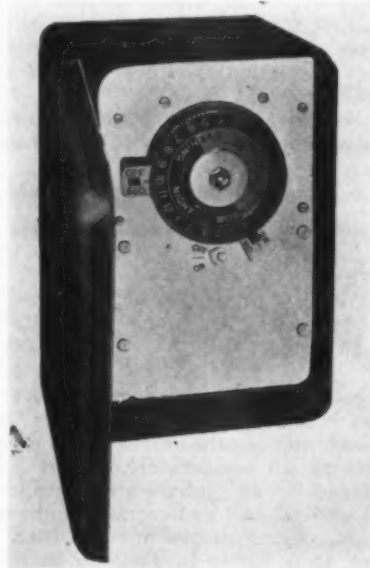
Pittsburgh Corning Corporation, 632 Duquesne Way, Pittsburgh 22, offers Foamglas as an insulating material for high temperature ducts. Foamglas is a cellular inorganic material, produced by adding finely divided carbon to ground glass and subjecting the mixture to a controlled high temperature heat treatment.

Foamglas withstood a 24-hour exposure at 1200 deg. F. at Pittsburgh Testing Laboratory without evidence of combustion or loss of weight. PC Foamglas meets Underwriters' Laboratories, Inc., specifications.

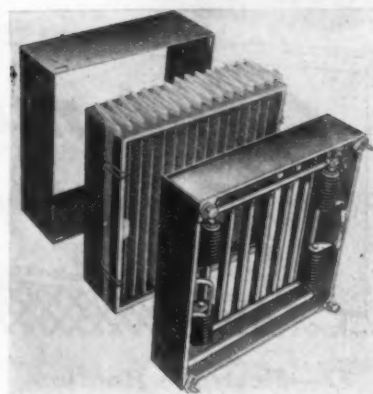
Foamglas is lightweight and easy to handle, can be readily cut with a knife in straight lines or odd shapes. It yields readily to such surface irregularities as rivet heads and welds, so that it can be pressed close to the area to be insulated without breaking or cracking. The compressive strength is 150 pounds per square inch average.

84—Heat-O-Meter

Miller Heat-O-Meter Company, 1434 W. Atkinson Ave., Milwaukee 6, is announcing the new Miller Heat-O-Meter Series TS3 time switch. The unit is powered by a Telechron "Chart



Movement" motor and gear train. "Mercury to Mercury" heavy duty, totally enclosed switches are used in the heavy duty models. The light duty models are equipped with enclosed dustproof snap switches. There are six standard models available immediately and thirty-five ampere, extra heavy duty models are available on special order.



86—Electro-Airmat

American Air Filter Co., 125 Central Ave., Louisville 8, Ky., offers the Electro-Airmat, in which the collector element is electrostatically charged Airmat paper. Introducing an entirely new principle in electronic air filtration, the arrestance rating of the Electro-Airmat, when tested by the discoloration method, is 90 per cent or better with atmospheric dust or smoke. This efficiency is obtained at the normal velocity of 35 f.p.m. thru the Airmat media and the standard rating of 1,000 c.f.m. per standard-sized 24 in. x 24 in. unit.

Airmat is American Air Filter's trade name for a cellulose product composed of a number of plies of porous, tissue-like sheets formed of short cellulose fibers in "jack-straw" arrangement. When an electrostatic charge is applied to Airmat, the plies tend to separate and each individual fiber becomes a collecting electrode which attracts and holds the dust and smoke particles. Airmat is also a highly efficient mechanical filtering media.

The full height ionizers reduce electrical losses due to fewer wire ends. The power pack operates on a 110 volt 60 cycle single phase current.

87—Alumicor Sheets

The Cheney Metal Products Company, Trenton 5, N. J., offers Alumicor metal—an aluminum alloy sheet, protected by a special coating. In the production of Alumicor, aluminum alloy sheets are processed under controlled heat and pressure with special bituminous compounds, pulverized slate and mica.

Alumicor requires no painting and remains unaffected by coal or oil burning fumes, salt air or other atmospheric impurities. It will not rust or corrode and will not discolor light colored stone or brick. It may be used in contact with steel without producing any electrolytic effect.

The name "Alumicor" was suggested by W. E. Jones, a member of the engineering department of United Illuminating Co., New Haven, Conn., who won the \$1,000 victory award for submitting the winning name.

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Streamlined Stoker Service Pays Off, by R. C. Nason	Oct.-Nov. 138	British Labor Victory—Is It "Handwriting on the Wall?"	Aug. 70
Taxes		AFL-CIO Similarities and Differences	Sept. 75
How Can Our Expected Heavy Post-war Taxes be Raised—Three Post-War Tax Plans	Jan. 118	Undercurrents in Labor-Management Conference	Oct.-Nov. 116
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What's Happening to Social Security Funds?	Feb. 52	Causes and Cures of 14 Welding Troubles, by C. H. Jennings	Jan. 172
Taxes for Small Firms	Feb. 55	Downdraft Ventilation for a Welding Booth, by H. T. Monston	Apr. 83
		Safety Factors in Arc Welding, by R. F. Wyer	Oct.-Nov. 151
		Shop Saves Time and Material with Welding..	Dec. 114

Two Heating Short Courses To be Held in 1946

Michigan State Short Course

The Michigan State College 15th annual Short Course is to be held March 18 through March 21, 1946, at East Lansing.

The core of this years short course will be built around a two-day Ideal Dealers School, terminating with the banquet on Wednesday evening. The other days will be filled with current technical material. There will be two classes—elementary and advanced.—Lorin G. Miller, Head, Department of Mechanical Engineering, Division of Engineering, Michigan State College, East Lansing.

Syracuse University Short Course

Syracuse University, Syracuse, New York, will hold its first "short course school" according to present plans beginning on April 15, 1946. The school will extend over a three or four day period and it will cover a course of instruction on gravity warm air heating and winter air

conditioning systems. The various sections of the textbook, "Practical Warm Air Heating," published by the National Warm Air Heating and Air Conditioning Association will be used for the "short course school."

In addition to a number of professors of Syracuse University who will assist in teaching the course, there will also be representatives of the Warm Air Heating Industry who are engaged in manufacturing, jobbing and contracting who will also be enrolled as teachers for the course. Thus the theoretical and practical angles in the teaching of the course will be fully covered.

Exact dates of the course and an outline of the program as well as the nominal registration fee required, room facilities, etc., will be announced later.

Professor Lorin G. Miller of Michigan State College who has had a wide experience in promoting the "short course schools" held at his college, has collaborated with the authorities at Syracuse University to make this forthcoming and first "short course school" of Syracuse University an outstanding event.

New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 134.

203—Taylor Instruments for Refrigeration

The Taylor Instrument Companies, Rochester 1, New York, has published a 36-page catalog—No. 300—dealing exclusively with the application of control instruments to the refrigeration field. The catalog is divided conveniently into two sections, one covering applications—the other, instruments.

204—Perolines Nos. 1, 2 and 3

American Chemical Paint Company, Ambler, Pa., is distributing a Technical Service Data Sheet on Perolines Nos. 1, 2 and 3—oil-like chemicals used to coat products constructed of iron or steel, that are later to be painted, to prevent rusting in storage or transit. The sheet tells what Peroline does, conditions under which used, and how used.

205—Transfax Process Reproduces Drawings

Eastman Kodak Company, Sensitized Goods Sales Division, Rochester 4, N. Y., is distributing a folder describing their Transfax Process for putting working drawings directly on metal. The process saves most where the drawing is complex or where it is necessary to transfer fabrication instructions to the metal, as no checking of details is necessary.

206—Metal Working Equipment

The Barth Manufacturing Company, Milldale, Conn., is distributing a 48-page catalog covering Barth machines and tools—squaring shears, slip roll forming machines, bar folders, slitting and rod shears, combination rotary deep-throat machine, beading machines, combination bench machines, crimping and beading machines, grooving machine, ring and circle shear, brace and wire bender, bench standards and plates, stakes, rivet sets and headers, folding drill stands, and combination square.

207—How to Install the New Stok-A-Fire

Stok-A-Fire Co., 6504 Olive Boulevard, St. Louis 5, is distributing a 16-page and cover pocket size booklet entitled "How to Install the New Stok-A-Fire De Luxe Model," compiled from experience over the years of making, installing and servicing stokers. The illustrations and "how-to-do-it" descriptions provide the explanation to do a first-class job, step by step.

The first picture shows a cut-away view of a 22-inch steel furnace, crated stoker, controls. Picture 2 shows the retort platform, (steel plate with heavy asbestos pad for wind box), limit control, stoker timer and relay, thermostat, cast iron hearth support, and each bolt (four with rubber supports) as well as steel re-inforcing bars, steel wire mesh, and asbestos sheets, all clearly labeled for position. In pictures three to twenty-five, the mechanic completes the installation by removing grates from the furnace; measures the distance from floor to grate ring; adjusts bolts to set the retort at old grate line in the heavy asbestos pad which the wind box rests on; positions and levels the stoker; assembles and installs the cast iron hearth support; cuts wire mesh to fit furnace and furnace base; covers with heavy asbestos paper to prevent castable grog from dropping through; trowels castable grog smooth; trowels asbestos gasket smooth into the grog material; pulls feed screw onto gear case socket, engaging gear case connection; and finally services the stoker for operation.

PEXTO GIVES CONFIDENCE TO SHEET METAL WORKERS

From the initial interpretation of shop drawings, each operation in sheet metal fabrication proceeds with the self-confidence of the craftsman in his Pexto machinery.

The finished product reflects the quality of the equipment . . . reaches the high standard of perfection to be expected with dependable tools.



No. 697 COMBINATION BRAKE AND FOLDER . . . 42"

THE PECK, STOW & WILCOX COMPANY Since 1785 SOUTHTON, CONNECTICUT, U. S. A.

Your post war
**MACHINE TOOL and
INDUSTRIAL EQUIPMENT**
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solved

THIS SURPLUS EQUIPMENT is available through **RFC**

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Check the types of equipment on which you desire further and continuing information. Mail to your nearest RFC office listed below. Your name will be placed on our regular mailing list.

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- ☐ Boring Mills
- ☐ Broaching Machines
- ☐ Turret Lathes
- ☐ Drilling Machines
- ☐ Gear Cutting and Finishing
- ☐ Grinding Machines
- ☐ Lathes
- ☐ Milling Machines
- ☐ Shapers and Slotters

INDUSTRIAL EQUIPMENT

- ☐ Hydraulic Presses
- ☐ Woodworking Machinery
- ☐ Electric Welding Equipment
(Arc or Resistance Types)
- ☐ Heat Treating Furnaces
- ☐ Inspection Testing and Measuring
- ☐ Conveyors
- ☐ Gas Welding and Cutting Equipment
- ☐ Engine Driven Generator Sets
- ☐ Process Control Recording Instruments
- ☐ Electrical Switch Gear
- ☐ Miscellaneous Metal Working Machinery

The following surplus equipment is also available in various makes and **LARGE QUANTITIES** . . .

- ☐ Ball and Roller Bearings
- ☐ Abrasives, Basic Products
(Grinding Wheels)
- ☐ Cutting Tools for Machine Tools
(Drills, Reamers, Milling Cutters)

NAME
TITLE
COMPANY
ADDRESS

The first problem of reconversion facing private industry today is the problem of getting machines in motion as soon as possible.

The vast stock pile of government owned surplus tools of every description being released to industry can help you reconvert. It is the job of the Reconstruction Finance Corporation to dispose of this surplus property quickly and effectively. Toward that end we ask you to follow this simple 3 step procedure:

- 1 Submit in writing your requirements for machine tools and industrial equipment to us now.
- 2 Send a typewritten list to your nearest R.F.C. Regional Office listed below.
- 3 Make your descriptions brief, one line if possible, clearly grouping various types of equipment you need.

The supply of industrial equipment and machine tools is sufficient to meet most of the needs of industry . . . as this partial listing indicates. Our job is to get these tools in your hands as speedily and easily as possible. The 31 strategically located offices below are ready to help you reconvert.

We want to make it easy to do business with RFC. If you desire, credit terms can be arranged. If your local office does not have all the equipment you need, they will endeavor to locate it from other offices throughout the country.

RECONSTRUCTION FINANCE CORPORATION

A Disposal Agency Designated by the Surplus Property Administration



Agencies located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver
Detroit • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville
Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia
Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane

130-T

USE
Peerless Electric
BLOWER ASSEMBLIES
in your
FURNACES and CABINETS



TWO TYPES

BOTH *Peerless Electric*

Belt drive assemblies with either top or rear mounted motor—with resilient bases to prevent vibration. Direct drive assemblies use specially-designed Peerless Electric capacitor motors—exceptionally efficient and quiet. Blower wheels, directly connected to motor, are forward curved, dynamically and statically balanced.

ELIMINATE service worries by installing Peerless Electric blowers for winter air conditioning and forced air heating.

Peerless Electric blowers—belt and direct drive types—are designed and engineered from more than 50 years of experience in building quality motors and electrical apparatus. Peerless Electric equipment is complete—manufactured entirely in our own modern plant—*not an assembled line*—and priced right, offering bigger profits to you.

Write for detailed information.



DIRECT DRIVE

Peerless Electric
AIRBOY PACKAGE UNIT

Delivers 850 cfm, sufficient for a house of approximately 10,000 cu. ft.; 3-speed motor with motor blower unit rubber cushioned. Blower wheel dynamically and statically balanced; a very compact unit. The two motor bearings are the only bearings in the unit.

THE *Peerless* ELECTRIC COMPANY
WARREN, OHIO
Established 1893

New Literature

For your convenience in obtaining information regarding these items, use the coupon on page 134.

208—Ball and Roller Bearing Engineering

SKF Industries, Inc., Front Street and Erie Avenue, Philadelphia 34, is distributing "Ball and Roller Bearing Engineering" by Arvid Palmgren, Dr. Eng., translated by Gunnar Palmgren and Bryce Ruley, of interest to engineers facing friction problems, who will probably find the answers to all questions in this book. It is a comprehensive discussion of the design and characteristics of anti-friction bearings, as well as their application to mechanical equipment. It is not of interest to furnace installers or sheet metal contractors.

209—Silbraz Joints—ADG-1017

Air Reduction Sales Company, 60 E. 42nd Street, New York 17, is distributing a 16-page, 2-color booklet entitled "How to Cash In On the Silver Ring." The booklet describes the Silbraz joint, the threadless connection that bonds I. P. S. copper tubing and brass pipe into a one-piece pipe line.

Photographs and text show how Silbraz joints are made from patented bronze pipe fittings, valves and flanges, containing a factory inserted ring of silver brazing alloy in each port opening; how Silbraz Joints resist corrosion and vibration; and how they simplify and speed up installation.

Other sections describe the Aircobraz Outfit for making these joints.

F. H. Speaker, after being out of business since 1943, has reopened his old business—F. H. Speaker & Son at 119 E. State Street, West Lafayette, Indiana.

210—Eighth Lincoln Welding Handbook

The Lincoln Electric Co., Cleveland 1, offers "Procedure Handbook of Arc Welding Design and Practice," eighth edition, 1,312 pages, 6 x 9 inches, 1,647 illustrations, including photos and drawings; cover, semi-flexible simulated leather, gold embossed; price postpaid United States \$1.50 per copy, elsewhere \$2.00 per copy.

Entirely revised to include the latest data on new arc welding methods and equipment, the eighth edition incorporates a wealth of new information that obsoletes much of the previous literature on welding.

The newly revised Handbook includes sixteen new subjects such as: New cost tables, New welding techniques, Mathematical calculations for new weld-designed structures, Latest steel specifications on S.A.E. and A.I.S.I., including National Emergency Steels, etc., Underwater cutting, Shop ventilation, Maintenance of welding equipment, Methods of testing, Filler metal specifications for arc welding electrodes.

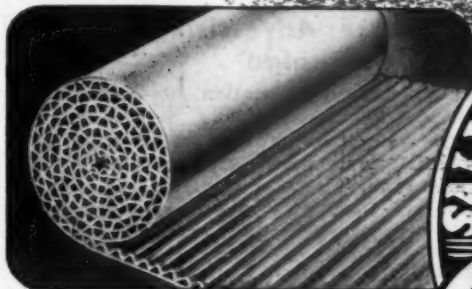
211—Stainless Steel Sheets—Handbook

Eastern Stainless Steel Corporation, Baltimore 3, Md., has just published the first edition of a condensed handbook for the engineer and layman covering the composition, properties, application and technical information on Eastern stainless for engineering purposes.

Eastern Stainless Technical Service offers information and advice in fabricating matters, performance problems or new developments. Eastern Stainless sheets can be sheared, blanked, punched, perforated, machined, formed, deep drawn, spun, heat treated, pickled, welded, soldered, riveted, ground, buffed and polished. Only moderate progress has been made in flame cutting and burning.

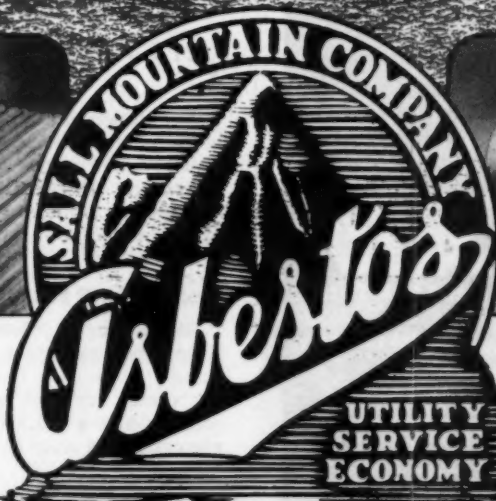
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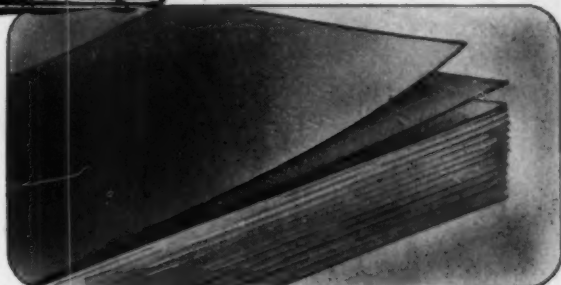
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An Asbestos product for constructing ducts in warm air heating, ventilating and air conditioning systems. Made of solid asbestos. Light in weight; fireproof and moisture proof. Easily handled and applied. 33x48" sheets.



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 NOW AVAILABLE**

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 done than you can see with your eyes.
 That's why we remind you to consider these
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 thousands of installations throughout the world) . . . a well-
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 918 S. MICHIGAN AVE., CHICAGO 5, ILLINOIS

New Literature

For your convenience in obtaining copies of
 New Literature use the coupon on page 121.

212—Thermostat and Pressure Switches

United Electric Controls Company, 69-71 A Street, Boston 27, Mass., is distributing a "Condensed Catalog and Price Sheet (4591-C)" indexed, covering their thermostats and pressure switches.

213—SMS Proposes Advertising & Sales Campaign

The Stoker Manufacturers Association, 308 North Michigan Avenue, Chicago 1, has published a "Report on Proposed Advertising and Sales Promotion Campaign for Automatic Coal Heat," summarizing the views and recommendations of the Advertising Committee, the Secretary of the Association and the SMA Advertising Agency.

214—Aluminum Coating

Reilly Tar & Chemical Corporation, Merchants Bank Bldg., Indianapolis 4, Indiana, is distributing a folder entitled "Aluminum Coatings" for protecting and beautifying metal surfaces with only one coat. This aluminum coating has a heavy coal tar pitch base, with aluminum pigment, and may be brushed or sprayed on.

215—Kwikheat Soldering Iron

Kwikheat Soldering Iron Division, Sound Equipment Corporation of California, 3903 San Fernando Rd., Glendale 4, California, is distributing a four-page folder illustrating and describing the Vanatta Kwikheat soldering iron with built-in thermostat for heat control. Specifications and list prices are included. There are six interchangeable tips.

216—Welding, Brazing, Silver, Soldering

Superior Flux Company, 913 Public Square Building, Cleveland 13, is distributing Catalog No. 44 listing twenty different fluxes for the welding, brazing and soldering of all of the metals ordinarily used in American industry. Prices are included.

A separate bulletin describes Superior No. 6 Silver Solder Paste Flux for use in brazing and silver soldering.

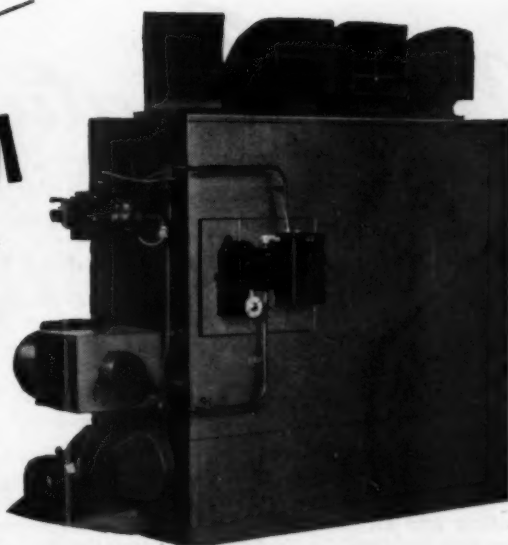
217—Cam-Stat Thermal Devices

The Paul Henry Company, 2037 South La Cienega Blvd., Los Angeles 34, California, is distributing a catalog page, illustrating and describing the Cam-Stat thermal devices.

The company makes a complete line of control devices embodying a unique snap action arrangement which controls temperature, pressure, humidity and mechanical displacement. Cam-Stat temperature controls are adjustable over a wide range and are furnished with operating differentials running down to as low as 1 deg. F.

218—Stainless Strip Steels

Superior Steel Corporation, Carnegie, Pa., manufacturers of hot and cold rolled stainless strip steel, has just released a colorful new brochure containing information and technical data on stainless strip steels. Illustrated throughout, the brochure describes properties, compositions and applications of various types and grades of stainless steel, in detail sufficient to be of value to designers and fabricators.



THE new Airtherm Space Heater provides an even distribution of heat to all parts of the building through high velocity nozzles — is installed with a minimum of installation costs and requires practically no maintenance.

The new Airtherm Space Heater is available in 3 models — for floor mounting (as illustrated) or horizontal or vertical suspension. Choice of gas or oil burners on all models. Capacities from 650,000 to 1,950,000 BTU's per hour.

Write for bulletin describing this new, efficient, money-saving heater, in detail.

AIR THERM
MANUFACTURING COMPANY

706 S. Spring Avenue • St. Louis 10, Missouri

Northwestern **REPAIR PARTS** *...keep the home fires burning*

NORTHWESTERN repair parts have for years been standard with responsible, successful heating men. They have proven to be reliable, economical and easy to work with because they are guaranteed to fit.

It will be quite some time before you're able to obtain new equipment and materials and in the meantime your customers

must keep right on trying to "keep the home fires burning" in aged heating plants well past their normal point of efficiency. It's YOUR job to keep these plants in operation—and you'll be able to DO it by specifying and installing guaranteed NORTHWESTERN repair parts. The same reliable quality . . . the same quick service you've come to expect, too!

Drop us a postcard today for literature.

Northwestern Stove Repair Co.

662 W. Roosevelt Road

Chicago 7, Illinois

New Literature

For your convenience in obtaining copies of new literature use the coupon on this page.

219—Aviation and Power Kraftr Snips

Karl Klenk, 107 East Fifth St., Wilmington, Delaware, is distributing a folder covering double action Aviation and Power Kraftr snips with serrated edges, and rubber grips.

220—Blower Wheels

Morrison Products, Inc., 16816 Waterloo Road, Cleveland 10, is distributing a 4-page bulletin covering their Airstream blower wheels for manufacturers of warm air heating and air conditioning units. The three piece construction, spot welded, is described, as well as aerodynamic performance.

221—Welding Price List and Catalog

Air Reduction, 60 East 42nd Street, New York 17, New Yorks, offers an up-to-date price list and catalog of Airco gas welding and cutting supplies and accessories. This 16-page booklet contains illustrations, descriptions, engineering data, and current prices.

Types of equipment covered include welding rods, brazing and welding flux, hose, brazing alloys, goggles and spectacles, gloves for gas welding and cutting, and spark-lighters and tips. Also listed are carbon rods and plates, hardfacing rods, cobalt borium inserts, pea borium, and other items.

222—Know Your Steel When You Build

The American Rolling Mill Company, 1717 Armco Avenue, Middletown, Ohio, offers "Know Your Steel When You Build or Remodel"—a fully illustrated 24-page booklet that describes the uses of special-purpose sheet steels in building construction, built-in equipment, and appliances.

The booklet is designed to help home builders understand the applications and the reasons for special-purpose sheet steels.

"Know Your Steel" emphasizes that the correct choice of steel is important because there are more than four thousand pounds in the average-size home. Then it tells about such special steels as a Bonderized, galvanized sheet that takes and preserves paint, recommended for roof drainage, for sheet metal equipment and for certain household appliances.

Other special-purpose sheet steels and their many household applications are also described.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

77	78	79	80	81	82
83	84	85	86	87	
203	204	205	206	207	208
209	210	211	212	213	214
215	216	217	218	219	220
221	222				

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Are you Manufacturer.....Jobber.....Dealer.....

PAYNEHEAT
OVER 30 YEARS OF LEADERSHIP

GAS FURN
(HRS)
EVERYTHING

A COMPLETE LINE
is the shortest distance
to full profit for the Dealer

...and the PAYNE "Line" is complete.

PAYNE gas furnaces are produced in models and sizes for every heating need and operating condition ... AGA-approved for natural, manufactured or L-P gas. ★ They are time-tried, soundly engineered, famed for long-life ... and progressively-improved to lead the vanguard in design and features. ★ We've now "reconverted" and are stepping-up production as rapidly as available materials permit. ★ Write for latest information.

PAYNE FURNACE COMPANY
(One of the DRESSER Industries)
BEVERLY HILLS, CALIFORNIA

Something NEW!

VITROLINER

BREECHING PIPE

(SMOKE PIPE)



VITROLINER is a new LONG LIFE breeching pipe for connecting heating plant to chimney and will give many years of trouble free service. Eliminates the expense and bother of frequent replacement. A complete line of fittings makes any hookup possible and can be easily and quickly installed. VITROLINER eliminates the fire hazard of corroded pipe. VITROLINER is made of heavy gauge steel completely coated inside and outside with porcelain to prevent corrosion. VITROLINER'S porcelain finish is attractive and adds to the beauty of any room.

SPECIAL FEATURES: The Telescope section of adjustable in length and is used to fill in any odd length not accommodated by standard lengths. Eliminates need for cutting pipe. Installed at chimney end of breeching pipe.

The Vitroliner damper section has a cleanout hole covered with a sliding sleeve. The cleanout hole is also used for installing a barometric or check damper. Small holes also provided for butterfly damper.

Vitroliner is easily installed and is ideal for venting dust, gas, corrosive fumes, paint spray, etc.



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MASONRY CHIMNEYS

VITROLINER
-the Superior Vent Pipe-

**VITROLINER CHIMNEY LINER
CREATES MORE DRAFT**

The porcelain surface of the liner is smooth, even, and is quickly heated and cooled. In less than 5 minutes the temperature is up to efficient operating temperature, thus providing an excellent draft and complete combustion in the heating plant. When heating plant is off, the liner cools immediately, and there is no draft to draw heat from the house. The Vitroliner liner is not harmed by acid condensation present in oil or gas-fired plants.

VITROLINER LINER can be installed in existing chimneys, easily and quickly—prevents chimney deterioration caused by condensation. Inspection of thousands of brick chimneys proves that an acid resisting chimney lining is necessary to protect the brickwork.

VITROLINER CHIMNEY LINER is heavy gauge steel, double coated inside and outside with acid resisting porcelain fused into the steel at 1575° F.

VITROLINER will correct DEFECTIVE LINING, SMOKE BACK, LEAKY BRICK JOINTS, and POOR DRAFT. Can be easily installed in straight or offset chimneys. All sections are made on dies and the bell and spigot joints insure an accurate and uniform fit.

Write for further information on sizes, prices, etc.

CONDENSATION ENGINEERING CORPORATION

122 S. Michigan Ave. Chicago 3, Illinois

*Be a Blower Dealer
for*

**QUICK
PROFITS**





**\$50 or more profit
for you on every installation**

NOW...EVERY GRAVITY FURNACE OWNER A PROSPECTIVE CUSTOMER

Plan to be an aggressive Blower Dealer and cash in on the tremendous market for Blowers. There's ready profit for you because Viking Blower-Filter installations mean profits of \$50 or more per installation, and they will come mighty often now that priorities are removed. That is why so many furnace men are becoming aggressive Viking Blower dealers ready to cash in on Winter Air Conditioning needs of their customers.

BLOWER SELLING MADE EASY!

★ Learn what Winter Air Conditioning really is and how to sell it. Get your own copy of our informative house organ "The Conditioner".

★ Planning file, sales and educational literature are yours to help turn leads into cash customers.



SEND COUPON TODAY!

Viking Air Conditioning Corporation
Dept. AA-12
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Cleveland 2, Ohio

Please send at once back issues of "The Conditioner" and Educational Literature.

Name _____

Address _____

City _____ State _____

Viking



AIR CONDITIONING CORP. 5600 WALWORTH AVE.
CLEVELAND 2, OHIO

With the Manufacturers

Meyer Furnace Expands

The Meyer Furnace Company, Peoria, Illinois, announces the purchase of additional factory facilities, including a grey-iron foundry, at Peru, Illinois.

Frank L. Meyer, president of the company, stated that the new plant will more than double the company's output capacity, especially in view of the inclusion of a



foundry, because the past few years the company has been dependent upon outside sources for its grey-iron castings. The foundry already is in production and other departments are being put into operation as soon as they can be equipped with machinery, and it is anticipated that the entire plant will be in full operation early in 1946.

The Johnson Fan & Blower Corporation, 1319 West Lake Street, Chicago 7, Illinois, manufacturers of Health-Aire heating and ventilating equipment, announces with profound sorrow the death of Arthur J. Johnson, president, on Monday, November 12.

Mr. Johnson founded his organization twenty-five years ago.

Honeywell to Expand Four Factories

\$3,500,000 expansion program involving additions to plants and machinery in four United States and Canadian cities has been announced by Minneapolis-Honeywell Regulator Company. Needed to handle expanding sales in all company divisions, the new program follows purchase of a ten-story Minneapolis factory and the addition of four floors to the main plant during the war years.

Included in the program is the construction of a new wing to the main plant in Minneapolis which will add approximately 120,000 square feet of manufacturing space to current facilities.

New Texas Plant for Bryant Heater

Bryant Heater Company, Cleveland, Ohio, one of the operating companies of Dresser Industries, Inc., will manufacture water heaters, floor and sidewall furnaces, and unit heaters in a plant now being built in Tyler, Texas. The plant, which is to cover 110,000 square feet, is due to be completed shortly after the first of the year, and will employ between 150 and 250 men.

The first products to be made in Tyler will be water heaters of both Bryant and Day & Night models. Next will follow panel heaters of Bryant and Day & Night make, and floor furnaces as designed by Bryant and by Payne Furnace Company. When in full operation, the plant will also make unit heaters of Bryant and Payne furnace design.

Rigid-Tex Corporation, Buffalo, N. Y., manufacturers of rigidized metals, announces the appointment of direct mill representatives, as follows: Chicago District, W. L. Holst, 43 East Ohio Street, Chicago 11, Ill.; Dayton District, J. M. Rowland, 603 Mutual Home Bldg., Dayton 2, Ohio; Detroit District, Frederic A. Leisen, 623 Fisher Bldg., Detroit 2, Mich.; Milwaukee District, P. D. Pearson Company, 324 East Wisconsin Avenue, Milwaukee 2, Wis.

A REAL OPPORTUNITY:

You are fortunate if there is cold water in your territory. For such areas are adapted to the installation of simplified *Jaden* cooling equipment which offers (1) Profit; (2) Simplicity of Installation; (3) Minimum of Service Requirement; (4) Consumer Satisfaction.

Present dealers and thousands of users will verify these important *Jaden* advantages.

If your city is still without *Jaden* representation, write at once for complete details.

Jaden

HASTING, NEBRASKA, U. S. A.

MANUFACTURERS OF AIR CONDITIONING EQUIPMENT

TEN IMPORTANT QUESTIONS

TO ASK ABOUT

THE WELDER YOU'RE GOING TO BUY



1. Can it deliver from 85 to 95 cents worth of usable welding current out of every dollar's worth of power it consumes?
2. Will it deliver a smooth, stable arc that's easy to handle in *all* positions?
3. Does it eliminate magnetic blow?
4. Does it permit welding at high amperage, without danger of under-cutting or burning through, so as to utilize the maximum rate of deposit for faster welding?
5. Can its current output be adjusted to any heat within its range, quickly and simply, without changing any electrical connections?
6. Does it deliver uniformly excellent welding characteristics throughout its entire output range?
7. Is it simply and ruggedly designed, with no moving working parts to wear, or require lubrication and maintenance?
8. Can it be provided with built-in, matched power-factor correction of ample capacity?
9. Does it bear the approval of Underwriter's Laboratories; or does it meet the standards of the National Electrical Manufacturer's Association?
10. Is it a "job-proved" make of welder; that is, does it have a record of years of satisfactory performance in job shops, fabricating plants, shipyards and factories?

If it's a G-R welder you're considering, the answer is "YES" right down the line . . . and if you want better faster welding at lower cost, don't take "no" for a single answer!

G-R's are built in manual, automatic or combination manual-automatic models with rated capacities of from 75 to 2,500 amperes. There's a G-R to fit your requirements exactly; for the full facts on a.c. welding at its best, see your nearby G-R dealer now, or write to:



GLENN-ROBERTS COMPANY

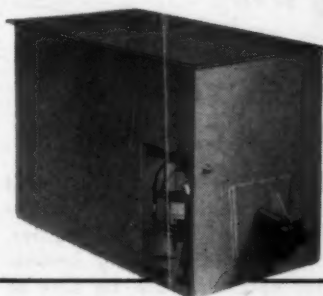
3100 E TENTH STREET - OAKLAND 1 CALIFORNIA
2107 ADAMS STREET - INDIANAPOLIS 1 INDIANA

APPLIANCES *worthy* OF YOUR
POST-WAR HOUSES



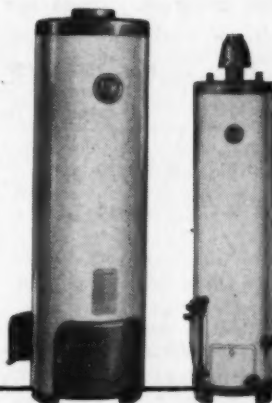
* *Always Good Merchandise!*

AGM FLOOR FURNACES



New, horizontal burner design drastically reduces floor-furnace depth—only 28" from top to bottom. No "ground water" or seepage problems. Little or no excavation required. Please write today for literature and franchise information.

AGM WATER HEATERS

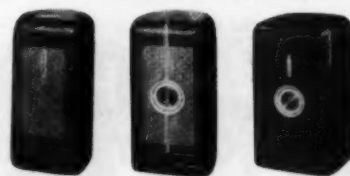


20 and 30-gallon oil and gas-fired automatic storage type heaters. Oil has exclusive Econolite pilot burner requiring only .6 gallon of fuel oil in 24 hours. Gas has cast aluminum slotted port burner. Finest construction and controls, beautiful *new* styling, yet competitive prices! Please write.

AGM is the maker of famous "Sun Flame" oil heating stoves known all over America for dependable performance.

write **AGM**

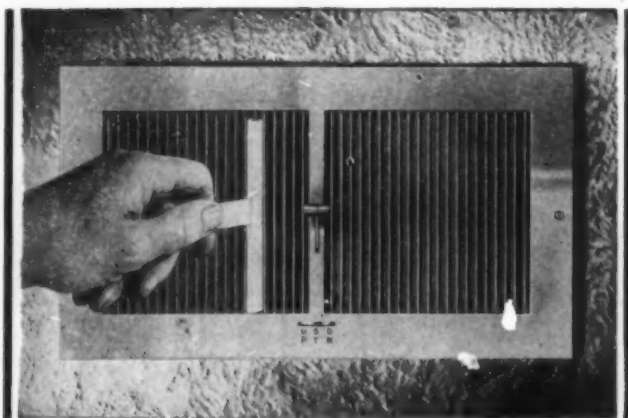
We will be pleased to send full details of our appliances.



AMERICAN GAS MACHINE COMPANY

ALBERT LEA, MINN.

Continuous Manufacturing Experience Since 1896



H & C NO. 75 DESIGN

The only A.C. Register employing the incomparable Turning Blade Valve. It provides more thorough and complete air distribution than can be had with any other register.

You're on the Beam

WHEN YOU USE THIS A.C. REGISTER

Yes sir, you're headed right towards the most satisfactory job of air distribution possible! Better than can be obtained with any other register. And the cost is no more than for any conventional multi-deflection register. But be sure to plan on the sizes called for by the National Association's Standardization program. These are as follows:

No. 751 Sidewall Register	No. 754 Baseboard Register	Nos. 750 & 757 Return Air Intakes
10 x 4		
10 x 6	10 x 6	10 x 6
12 x 4		
12 x 6	12 x 6	12 x 6
14 x 4		
14 x 6	14 x 6	14 x 6 24 x 6 30 x 6



Turning Blade Valve

For best service order all registers and furnace accessories in strict conformity with our Bulletin S-121. Ask your jobber or write us for a copy if you do not have one. Current catalog is No. 42.



HART & COOLEY MANUFACTURING CO.

World's Largest Manufacturers of
Registers, Grilles, Furnace Accessories
HOLLAND • MICHIGAN

With the Manufacturers

In accordance with its policy to provide personalized engineering service to all users of welding, The Lincoln Electric Company, Cleveland, announces the appointment of the following district office representatives who have been added to the firm's engineering staff.

John A. Smithers was named welding engineer in the Detroit area.

W. L. Herbst has been appointed welding engineer at the Chattanooga, Tennessee office.

Harold M. House has been appointed welding engineer in the Moline, Illinois area.

L. B. Wallner has been appointed district welding engineer at Duluth, Minnesota, replacing I. R. Bortler who was promoted to welding engineer at Lincoln's Grand Rapids, Michigan office.

C. M. Burnett has been assigned the position of welding engineer in the Boston, Massachusetts area.



R. S. Quimby

Frank E. Mehrings, vice president and salesmanager of The Meyer Furnace Company, Peoria, Illinois, announces appointment of Russell S. Quimby as assistant sales manager.

Mr. Quimby was for 19 years associated with Standard Furnace & Supply Company of Omaha, first from 1924 to 1927 and rejoining that organization in 1929 after spending one year with Quick Furnace & Supply Company of Des Moines, Iowa. Previously, for one year, he was associated with the L. J. Mueller Furnace Company of Milwaukee, Wisconsin.

Mr. Quimby enjoys a wide acquaintanceship among the trade, especially in the West. He was raised in the furnace and sheet metal business of his father in Lincoln, Nebraska.

Mr. and Mrs. Quimby have moved to Peoria where they now reside at 327 North Sheridan Road. They have one son, Raul, who is at present in the United States Coast Guard.

The Perfex Corporation, of Milwaukee, announces that Curtis H. Soderberg has resumed his pre-war duties as manager of their Philadelphia office.

Soderberg, who has been associated with the heating industry for the past 17 years, has been located in the Milwaukee office since July, 1942, where he served as manager of the priorities department and also as liaison man for development engineering.



E. E. Frederick

W. A. Matheson, manager of the Williams Oil-O-Matic Division, Eureka Vacuum Cleaner Company, Bloomington, Illinois, announces the appointment of E. E. Frederick as national service manager. Mr. Frederick, manager of the plant's standby facilities for Ordnance since October 1944, now assumes charge of all field service. In addition, he will head the handling of parts, repairs, factory rebuilds, and claims. Mr. Frederick is a veteran of World Wars I and II and holds the commission of major in the inactive reserve of the United States Army.

Prior to his Oil-O-Matic connection, Mr. Frederick was with the A. O. Smith Corporation of Milwaukee as assistant to the manager of the St. Paul Propellor Plant. Before entering the army he was with the Smith organization as assistant to the manager of the war facilities division and previous to that as tool and production engineer in the household appliance division.

Chicago Filter Company, P. O. Box 807, Joliet, Illinois, announces the appointment of H. J. Nicholson as factory representative for Chicago and vicinity.

The factory office is located at Room 435, 53 West Jackson Boulevard in Chicago.

YOU SAVE **3** WAYS WITH
1 2 REZNOR
 ★ GAS FIRED UNIT HEATERS ★



Used either for primary or auxiliary heat, Reznor Unit Heaters are ideal in heating all sizes and shapes of industrial buildings, retail stores, garages, airports, churches, bowling alleys. In fact, they are used the world over to heat all sizes of areas, large or small.

You can forget all about your heating problems after Reznor Heaters have been installed.

You need *no labor* for firing. Dependable Reznors operate automatically and supply heat when you want it where you want it.

You *pay only for fuel used*. When the smooth-working Reznors shut off, your fuel bill stops instantly.

No heat loss due to transmission. Reznor Heaters fire directly to the area. The giant size, noiseless fan delivers an even flow of clean, comfortable heat.

Reznor, the oldest name in gas heating equipment, makes a full range of sizes of gas-fired unit heaters. Fuel cost is the *only* operating cost. You save three ways when you use Reznor Unit Heaters.

REZNOR MANUFACTURING CO.
 JAMES STREET • MERCER, PENNA.

"GAS HEATERS EXCLUSIVELY SINCE 1888"

Rescue the gal with FIRELINE



seals cracked
and broken
firepots



You merely pound Fireline into place with a hammer, smooth it off. When the fire has baked it out, Fireline is a lasting lining that will take temperatures to 3,000 deg. F.—hotter than any domestic furnace ever could be.

Mrs. Finicky is in a mess. The firepot in her furnace has finally cracked wide open on the very day winter struck the old homestead. Gas, smoke and soot stream from the registers . . . threaten to choke her as she phones you for help. And she doesn't want to freeze while you're saving her life.

Now that's where you come in—with Fireline. Tell her to kill the fire tonight, and in a few hours tomorrow morning you can have the firepot lined with Fireline. A new fire can be started immediately in a furnace that will work right and won't leak gas, odors or dirt into the house.

Here's the point: Fireline enables you to put a cracked firepot back into action in a fraction of the time required to dismantle a furnace and replace castings the old way. Quick handling of the job means greater profit in proportion to labor and material involved. You can handle more jobs, at a higher profit percentage.

Fireline is a putty-like refractory in moist, plastic form. It's ready to use—nothing to mix—nothing to add. Quickly, easily installed through the furnace door, it provides a durable lining that produces a hotter fire across the entire firepot. It is often used, in fact, to preserve firepots that are still in good condition and to improve combustion efficiency of the furnace. For steel furnaces, it can be moulded to any shape to replace refractory tile. Use it for setting stokers and for oil burner combustion chambers.

Keep a drum of Fireline on the truck so you can get this winter-long, profitable business. Available immediately from jobber stocks. Write for bulletins, prices, and name of nearest jobber.

FIRELINE STOVE & FURNACE LINING CO.
 1816 Kingsbury St. (Dept. L) Chicago 14, Ill.

FIRELINE
 STOVE & FURNACE LINING

With the Manufacturers

Minneapolis-Honeywell Regulator Company has opened a new office in South Bend—a sub-office under the Indianapolis branch, staffed by Richard Stewart, who is to be district representative for Honeywell controls, and George Gilliam who will supervise industrial instrument operations in that area. The office is located at 224 West Jefferson Street.



Leo B. McCoy

Leo B. McCoy has been appointed sales representative in the New Jersey territory for Janitrol gas-fired furnaces and burners made by Surface Combustion Corporation, Toledo, O.

Mr. McCoy formerly was with the Public Service Electric and Gas Co. as a heating and air conditioning sales representative in Passaic, Hackensack and Rutherford, N. J., joining that company following his honorable discharge from the Army in 1943.

York Corporation announces the formation of York Distributors, Inc., a fully owned subsidiary, to provide complete sales, installation and service for York air conditioning and refrigeration equipment in the New York area.

W. A. Pusch has been named president and treasurer of the new corporation. Other officers are R. C. Follett, vice president and sales manager, and John F. Lebor, secretary. The board of directors is made up of Messrs. S. E. Lauer, Pusch, E. A. Kleinschmidt, J. R. Hertzler and A. Christensen.

Temporary offices are at 41-11 28th Street, Long Island City. New and permanent offices, comprising approxi-

mately 17,000 sq. ft. of floor space, are under construction at 11-30 46th Road, Long Island City, to house offices, shop, service, sales and display for York equipment and a complete stock of repair parts.

Frank E. Johnson has joined the research and development staff of The C. A. Olsen Mfg. Company in Elyria, Ohio. Johnson graduated from Annapolis in 1934 and until 1941 assisted in the research and development division of The Goodyear Tire & Rubber Company.

The Navy recalled Johnson in 1941 and sent him to the Massachusetts Institute of Technology for an advanced course in aircraft engines. Commissioned a Commander in the U.S. Navy he was transferred to the Pacific theater of action where he spent many months in the naval engineers' office, in charge of aircraft engine maintenance.



Frank E. Johnson



Eric Ryden

Eric Ryden has joined the research and development division of The C. A. Olsen Mfg. Company, Elyria, Ohio.

A graduate engineer of the Royal Institute of Technology in Stockholm, Sweden, he was first associated with the General Electric Company in 1922. Some years later while with the Western Electric Company, he assisted in the research and development of the first telephone picture transmitting equipment.

In recent years he has devoted his entire time and knowledge to research and development of heating and air conditioning equipment.

MASTER TEMPERATURE CONTROLS

IT SEEMS MIGHTY NICE TO RESUME PRODUCTION OF SOME OF OUR REGULAR UNITS

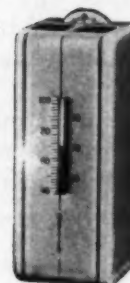
Of course it is a day and night job to rearrange equipment, re-train help and comb the market for materials. However, we are making progress every day. Right now we are doing a fairly good job in producing our old reliable B-22 damper motor and our A-23 plain thermostat.

You will have to wait a little longer for production on other standard White units and the several new things that we shall offer you just as soon as conditions permit. We assure old and new friends that these items deserve your patience.

The "Master" mark on future temperature controls will mean
GREATER COMFORT . . . LONGER LIFE . . . MORE EFFICIENT SERVICE FOR YOUR CUSTOMERS . . . EASIER SALES FOR YOU.



B-22 Motor



A-23 Plain
Thermostat

WHITE MANUFACTURING COMPANY

2368 University Avenue
St. Paul - Minnesota



Niagara 18 Gage Foot Operated Shears with 96 inch and 120 inch cutting lengths are ideal for sheet metal shops and maintenance departments requiring long sheets. Easy foot operation is the result of the design of every working part. Treadle extends the full length of the shear and is accessible at any location when cutting large sheets. Holddown is operated by self-locking eccentrics, thus enabling operator to let go of holddown handles while pressing the treadle. Ball-bearing, self-measuring, parallel back gage is standard equipment. Write for Bulletin 80-D. Niagara Machine & Tool Works, 637-697 Northland Ave., Buffalo, N. Y. District offices: Cleveland, Detroit, New York.

TRIANGLE SHOCK ABSORBING PILLOW BLOCK

Designed by Triangle engineers for fans, blowers and other devices requiring silent operation, perfect alignment and self-lubrication.



Preloaded oil-proof cushion built into the bearing. Ball-and-socket design. Write for samples and complete information.

TRIANGLE MANUFACTURING CO.

392 DIVISION STREET

OSHKOSH, WISCONSIN

A·R·A SHEETS

for Non-Metal Duct Work
in the Heating, Ventilating
and Air Conditioning Field

Keep an ample supply of
these easy nationally known,
stock working sheets in
duct work for fabricating
as illustrated, every type,

Don't wait until the last
minute for any kind of
sheets in this changeable
market.

Your jobber can now sup-
ply you with preferred
A.R.A. Sheets and in any
quantity.

Asbestos clad A.R.A.
Sheets are tough yet flex-
ible—rigid but not brittle
—fire-proofed and brittle
ture-proofed — will not
dry out, crack, crumble
or chip. A.R.A. Sheets
have a high insulating
value (K .45 B.T.U.) —
good sound deadening
properties — and they
deaden metallic rattle.

SQUARE

ROUND

RECTANGULAR

Intricate and un-
usual fittings can
easily be fabricated
from A.R.A. Sheets.

You can only be sure of the Inventory you actually have on hand when scheduling your jobs. You can't fabricate duct work or seal in joists with rumors, promises, or hopes. Now is the time to take advantage of the availability of A-R-A Sheets—tested, approved and pronounced the most satisfactory and safest sheet of its kind on the market today!

CARTON CONTENTS
20 Sheets 33"x48" Per
Carton

Shipping Weight
Approximately 100 lbs. per
Carton

Get genuine A.R.A. Sheets from your Jobber

GRANT WILSON, INC.

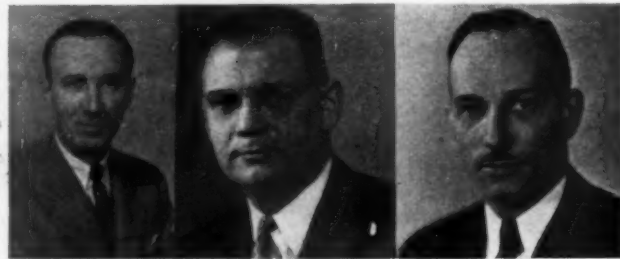
141 WEST JACKSON BLVD. AT LA SALLE ST., CHICAGO 4, ILL.
(22nd Floor, Board of Trade Bldg. Phone: Webash 8220)

With the Manufacturers

Payne Expansion Program

Payne Furnace Company, of Beverly Hills, California, for three years engaged in war production and now well along the road to reconversion, has launched a quarter-million dollar expansion and building program, designed to double production of its gas-fired heating equipment.

The plan contemplates the immediate construction of two additions to the factory, totaling 64,000 sq. ft., and the installation of the most modern new machinery and equipment, such as a battery of paint-drying ovens and conveyer systems to speed line-production and loading.



W. P. Schwarm

R. S. Schmieder

H. Vernon Stahl

Walter P. Schwarm, general sales manager of the Milcor Steel Company, Milwaukee 4, subsidiary of Inland Steel, has been elected vice president in charge of sales at a special meeting of the Board of Directors.

Starting as a worker in the Milcor plant back in 1919, Mr. Schwarm was later employed in the cost, billing and order departments. He was made assistant general sales manager in 1928 and general sales manager in February, 1944.

Succeeding Mr. Schwarm as general sales manager is Robert S. Schmieder, who has returned to Milwaukee from the company's Baltimore branch. Mr. Schmieder has been with Milcor for 27 years.

The position vacated by Mr. Schmieder at Milcor's Baltimore branch is filled by H. Vernon Stahl, whose now title is district sales manager. Mr. Stahl traveled as a Milcor representative for a number of years before the war.

Marion A. Elliott has been appointed to the staff of the Detroit, Michigan, office of ILG Electric Ventilating Co., Chicago 41. He has had many years' experience with closely allied lines. Immediately preceding his ILG appointment, he was employed in sales engineering and product development department of Marine Products Company.



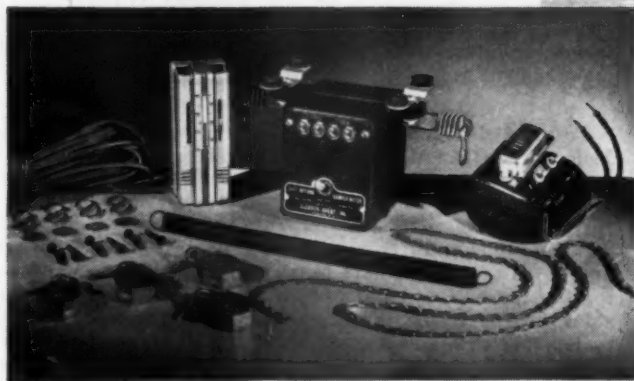
Marion A. Elliott

Ed A. Wilson, Jr., who has been the representative for Grant Wilson, Inc., in Michigan for the last ten years has joined the Warm Air Heating Supply Company organization in Dearborn, Michigan.



John E. Nesbitt has resumed his duties as a New England district representative for Williams Oil-O-Matic Division, Eureka Vacuum Cleaner Company. Since July 1942, Mr. Nesbitt has served with the Army Air Force and held the rank of major at the time of his discharge.

- FAST SELLING
- EASY TO INSTALL.....



G-A FURNACE SENTRY

Your customers want the dependable accuracy . . . simple operation . . . trouble-free service* . . . offered by the Gleason-Avery Furnace Sentry. That's why the Furnace Sentry means quick sales, *satisfied customers*.

Easy to install; comes complete with smartly finished thermostat, damper motor (mountable in any position), plus all needed accessories . . . ready for installing in hand-fired domestic heating plants.

List Price, \$20.45. Direct orders accepted when accompanied by your wholesaler's name.

*Finger-tip adjustments and synchronized settings assure efficient performance. Gleason-Avery exclusive Straight Line Control and Sprint Return prevent overheating; eliminate chain-tangling, troublesome sprockets and rotating arms.

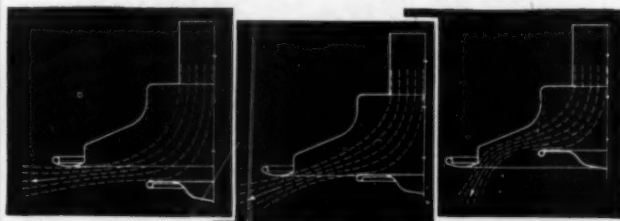
Approved by Anthracite Industries Laboratory

Gleason-Avery, INC.
AUBURN, N. Y.
A RELIABLE NAME IN TEMPERATURE CONTROLS

How adjustable air diffusers increase the efficiency of supply air diffusion.

Better mixing of room and supply air, more uniform temperatures throughout the occupied zone and noiseless, draftless air diffusion are accomplished with

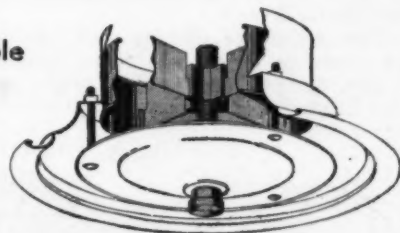
KNO-DRAFT adjustable Diffusers



Any desired angle from vertical to horizontal at your fingertip.

By simply turning the air adjustment screws (easily accessible from under the unit) the inner cone of any KNO-DRAFT Diffuser may be raised or lowered to secure any angle of air direction required by ceiling heights, system balancing, and individual or seasonal requirements. Thus the diffuser becomes more effective whether it is used in cooling, heating, ventilating, or combined systems, because it can expel chilled air parallel to the ceiling or eject heated air downward to prevent stratification.

Type K Adjustable Diffuser with Type D Volume Damper.



Pat. and pat. pending

Any desired volume at your fingertip

Every KNO-DRAFT Diffuser can be equipped with a built-in volume damper (easily adjusted by hand-turning knob under diffuser) which varies the outlet aperture uniformly without affecting the outlet velocity or diffusion pattern.

Thus KNO-DRAFT Diffusers can be adjusted quickly and accurately to the angle and volume needed to meet a wide variety of conditions, and as a result, the factors of temperature variation, temperature fluctuation, drafts and noise can be minimized considerably.

The W. B. Connor Engineering Corp. maintains a staff of specialists and district representatives in leading cities to assist you with any air distribution problem.

FREE HANDBOOK

Contains clear sketches, charts, dimension prints and instructive text that simplify the selection and installation of air diffusers.

For your copy write Dept. J-10.

W. B. CONNOR ENGINEERING CORP.

Air Diffusion

Air Purification

Air Recovery

114 E. 32nd Street

WB

New York 16, N. Y.



With the Manufacturers

Evans Products Company, Detroit, announces the appointment of Mel Robb as sales manager. He returns to Evanair to handle Evans field personnel. He will service space heater products now distributed through The Westinghouse Electric and Supply Company and independent distributors.

Prior to the war, Robb was sales manager for Evanair and after Pearl Harbor, became assistant to R. B. Evans, vice president supervising sales and service for the Sky Products Division.



James B. Finger
and Reemployment

James B. Finger has been named divisional sales manager of the Coraire Heater Corporation, Cleveland.

Mr. Finger comes to the Cleveland company from the National Association of Manufacturers' headquarters in New York where he served as director of promotion. A veteran of World War I and still active in American Legion affairs, Mr. Finger has been particularly concerned with NAM's program for Rehabilitation of World War II Vets.

Evans Products Company, Detroit, announces the transfer of Ralph E. Oursler, former Middle West representative of the Company's Sky Products Division, to the Evanair Division. He will represent the Company throughout the Middle West.

During the war, Oursler traveled over 160,000 miles by air, training Army and Navy personnel in the United States, Canada, and Alaska, in the proper use of Evans Sky Loader equipment.

Lincoln Electric Fiftieth Anniversary

A silver plaque honoring John Cromwell Lincoln as founder of The Lincoln Electric Company, Cleveland, was presented him on December 5, by the firm's employees as a token of their esteem to mark the company's fiftieth anniversary.

Lincoln started the concern with a capital of about \$150, just 50 years ago in downtown Cleveland.

Now Chairman of the Board and a resident of Phoenix, Arizona, for the past several years, J. C. Lincoln has seen his firm grow to its present position as a producer of electric arc welding equipment.

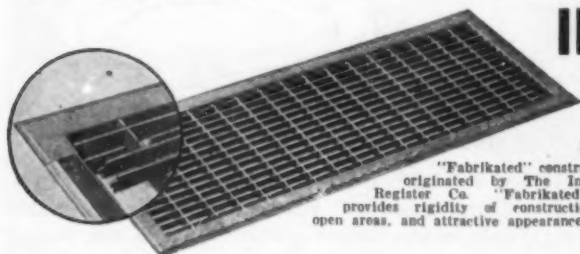
Under the leadership of his younger brother J. F. Lincoln, president, this manufacturing concern has been widely publicized for its incentive system of worker-management relations.

To meet the increased demand for Fire Tender stokers, Holcomb & Hoke Mfg. Co., Indianapolis, announces a complete revamping of their production facilities for a greatly increased production.

At the same time the company announces an enlargement of their sales personnel for a more complete coverage of all territory where bituminous coal is used. Heading the home office sales program will be A. H. Vigdor as sales director. Mr. Vigdor, assisted by several district managers, will specialize on the establishment of new dealer and distributor accounts. Handling of the many details incident to dealer sales will be in the hands of Kenneth Fisk as sales manager, with sales promotion and advertising in the hands of I. C. Stevenson.

Messrs. Vigdor, Fisk and Stevenson have been identified with Holcomb & Hoke for a combined total of 65 years.

C. E. Haag, chief engineer of the Kalamazoo Stove & Furnace Company, Kalamazoo, Michigan, died suddenly on December 3, of a heart attack at the age of 51.



INDEPENDENT "FABRIKATED"

(Reg. U. S. Pat. Off.)

Style
No. 132

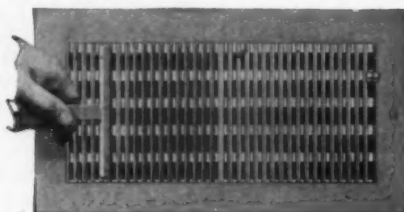
"Fabrikated" construction was originated by The Independent Register Co. "Fabrikated" design provides rigidity of construction, large open areas, and attractive appearance.

Registers · Grilles · Cold Air Faces ·

...and wrought
steel registers
with flexible
grille bars..

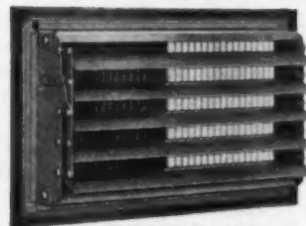


Always Leading
Always Progressing



No. 238

Adjustable four-way direction of air flow. The vertical grille bars are formed from sheet metal and set at an angle of 30 degrees; $\frac{1}{4}$ to the right and $\frac{1}{4}$ to the left. The bars may be bent to direct the air flow to any other right or left angle or straight outward. Openings between bars, $\frac{1}{4}$ inch.



Horizontal Multiple Valves

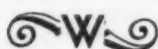
Simple out-of-sight valve control not easily tampered with. A quarter turn of the valve control screw located near the opening lever will set the valve to direct the air flow either up or down or straight outward. These valves may be fully closed from any directed flow setting.

THE INDEPENDENT REGISTER CO.

3747 EAST 93RD STREET, CLEVELAND, OHIO

Patience is a Virtue..

George Granville



OF COURSE that's not all of George Granville's famous quotation, but it's enough to illustrate our story.

We thought it appropriate to remind you of the need for patience because it will be some time yet before you are able to go after your home-heating prospects in the good old-fashioned way. Our present circumstances, along with other manufacturers, preclude any possibility of supplying you the way we would like . . . and we **WON'T** be able to for awhile yet.

We would like you to remember, however, that we've been making quality furnaces and air conditioning plants for over forty years and when we **ARE** able to make deliveries you may rest assured the units will incorporate all the experience and "know-how" we've accumulated in that time. It will be a while longer, but more to your advantage in the long run.



WISE FURNACE CO.
AKRON 8, OHIO

ELATERITE RIGHT for ROOFS

6 IMPORTANT FACTS

- Elaterite is Adhesive
- Elaterite is Elastic
- Elaterite is Not Affected by Acids or Alkalis, Water or Gases
- Elaterite is Non-Inflammable
- Elaterite is Inexpensive
- Elaterite is Easily Applied

ELATERITE ROOFING IS IDEALLY ADAPTED FOR—

New concrete slab roofs. New roof construction on wooden decks with roofing felt. (It is applied cold.) Paving or Renewing Old Roofs, whether tar or gravel; corrugated; roll roofing of all sorts; corrugated iron roofs; modern metal deck construction; in fact, anything that gives it a firm foundation to rest upon.



**SEND TODAY FOR
Complete Data on this
AGE-OLD PLASTIC SECRET**

ELATERITE NON-METALLIC PRODUCTS CO.
355 SOUTH BROADWAY
LOS ANGELES 13, CALIF.

NAME

FIRM

ADDRESS

CITY..... STATE.....



7" Heavy-Duty Sander \$65

7" Junior \$39.50
7" Standard . . . \$33
9" Heavy-Duty . . \$78

This One POWER TOOL Does All..

A Black & Decker Portable Electric Sander drives many attachments . . . does many fabrication and installation jobs . . . on all types of heating, piping and air conditioning work. Available attachments include:

WIRE CUP BRUSHES for removing rust, old paint, scale, light weld spatter, oxidation, grease or tar.

ABRASIVE DISCS in 19 different grains, for sanding and smoothing any surface.

GRINDING WHEELS for smoothing welds and castings, surfacing concrete, stone or tile.

ROTARY PLANNER HEADS for shaping and semi-finishing lumber—jobs formerly done with jack plane and adz.

Order now from your Black & Decker Distributor, or write to: The Black & Decker Mfg. Co., 682 Penna. Ave., Towson 4, Md.



Sands any Surface



Grinds any Metal



Speeds Wire Brushing



Semi-Finishes Lumber



Shapes All Timbers



Surfaces Stone, Tile



LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS



ELECTRIC DRILLS



ELECTRIC SHEARS



BENCH GRINDERS



WIRE BRUSHES

News Items

Tuve Heads Case M.E.

Professor G. L. Tuve of Case School of Applied Science, Cleveland, Ohio has been appointed head of the Department of Mechanical Engineering by Pres. W. E. Wickenden to succeed Professor F. H. Vose, who has held the office for 31 years. Professor Tuve has served on the Case Faculty since 1930.

For the past two years, Professor Tuve has been Chairman of the Committee on Research of the American Society of Heating and Ventilating Engineers and has served on its Council for five years. Since joining the ASHVE in 1932 he has served on many of its Research Technical Advisory Committees, as a member of the Meetings, Standards and Guide Publication Committees and he has contributed numerous papers which appear in the Society's Transactions.

Professor Tuve has specialized in heating, ventilating, air conditioning, heat transmission and air flow since receiving his B.S. in Mechanical Engineering from the University of Minnesota 1920; and his M.E. from the same institution in 1921. His industrial experience has been with the Public Service Company of Northern Illinois, the Allis Chalmers Manufacturing Company, the American Locomotive Company and others. He joined the staff of the University of Minnesota and then became Assistant Professor of Mechanical Engineering, University of Montana and later Professor and Head of the Department of Mechanical Engineering at Texas Technological College.

He is co-author with Professor C. F. Shoop, of a text book entitled Mechanical Engineering Practice which includes instruction for common test work encountered by heating and ventilating engineers. He has been a contributor to Marks' Mechanical Engineers Handbook and to many technical publications. He is a member of ASME, the SPEE, Sigma Xi and Tau Beta Pi.

Dr. Giesecke Resigns from Texas A. & M.

Dr. F. E. Giesecke has resigned from the staff of Texas A. & M. after 59 years of service in the field of education.

Dr. Giesecke graduated from A. & M. College in 1886 at the head of his class in engineering and as the highest ranking cadet officer. Upon graduation he was appointed an instructor in the Mechanical Department; he continued as a member of the College staff until 1912 when he transferred to the University of Texas, where he served on the staff for 15 years and then returned to A. & M.

At the University, he was Head of the Division of Engineering Research, and at the A. & M. College, Director of the Engineering Experiment Station until his retirement from active duty in 1939.

Dr. Giesecke holds the degrees of Mechanical Engineer from Texas A. & M. College; Civil Engineer from the University of Illinois; Bachelor of Science in Architecture from the Massachusetts Institute of Technology; and Doctor of Philosophy from the University of Illinois; he is a former student of Cornell University and of the German Engineering School at Berlin. He is the author or co-author of more than 75 technical bulletins and magazine articles and of books on Technical Drawing, Descriptive Geometry, Hot-water Heating, and Radiant Heating. He is a past president of the American Society of Heating and Ventilating Engineers; also of the Texas Section A. S. C. E., Texas Chapter A. H. H. & V. E., and of the Texas Chapter S. P. E. E., he is a life member A. S. C. E., a life member of A. S. H. V. E., charter member and life member of S. P. E. E., a member of A. S. M. E., of Tau Beta Pi, and of Sigma Xi. He married Miss Hulda Gruene of New Braunfels in 1891. Dr. and Mrs. Giesecke have four children—Mr. B. E. Giesecke of Austin, Mrs. M. B. Hodges of Austin; Mrs. P. M. Geren of Fort Worth, and Mrs. Ed A. Wight of Ocean Grove, N. J.

Dr. Giesecke will devote part of his time to professional work as a consultant.

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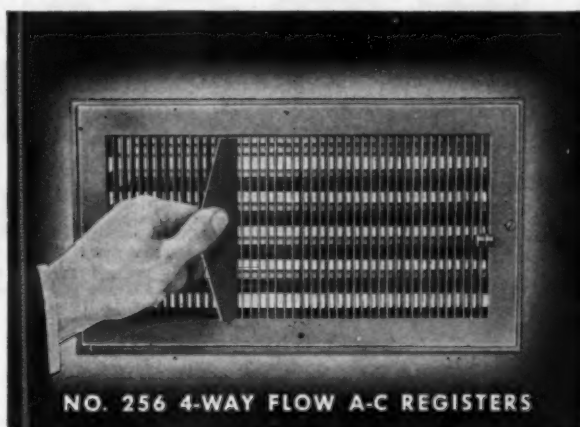
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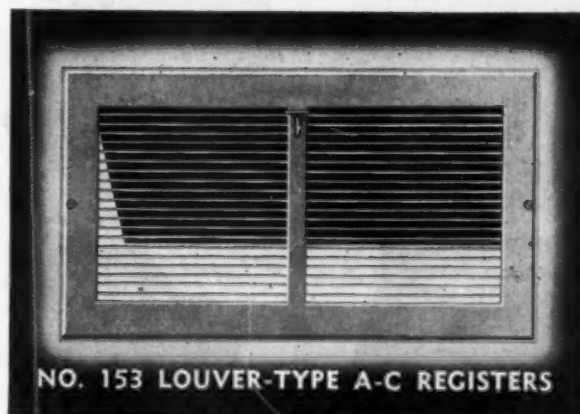
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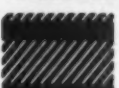
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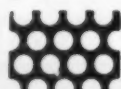
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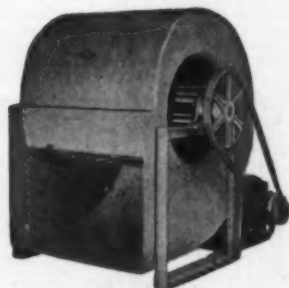
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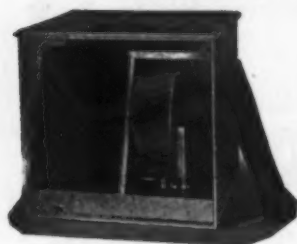
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Zideck—Forming Pittsburgh Locks

(Continued from page 109)

Views 1-2 of the group. A slotted piece of a metal strip is employed, the strip sliding up and down upon the bolts threaded into the flat die. If tubes are used in this connection discs may be welded into their ends, the discs drilled and threaded for bolts, as shown in View 2. The tube is adjusted to contact the flat die at the top so that the pressure of the descending flat die will be imparted to the tube (or rod, as may be employed), the aforesaid slotted strip serving only to hold the tube. Any size (diameter) of tube (or rod) may be thus employed in connection with the slotted strip, for use in beading or radial formation of the size desired.

The plug may be set $\frac{1}{4}$ inch inside the tube and in this position it is practical to weld by either torch or arc, or to braze the metal without difficulty irrespective of how long the tube may be.

The "female" counterpart in this combination is more or less standard, rubber being employed for the "male" die to sink into, causing the sheet metal pressed over the rubber to assume the shape of the die. We show here a simple arrangement whereby the container for rubber can be adjusted to varying widths.

In some cases strips of sheet metal can be employed, instead of a rubber block, bolted to the slidable angles of the "bed" part. The metal strip so employed can be formed to shape, after it is bolted as shown, to the radial of the descending tube, and then the slidable angles can be bolted tight. If we use the metal strips (in quantity production of one size radial), we receive a smoother and more uniform formature than is possible in rubber. But where this latter exactness is not of importance, rubber will do the work.

With this arrangement, properly constructed and manipulated, we could form, for instance, either a one or two-beaded eavetrough of the length of the flat die of the press brake. By using a small diameter rod secured by the slotted strip to the flat die, as shown, we could form the edge-portion of the metal strip into a partial beat which we could complete in a standard 90 degrees female die, and a flat die operation from upward. With the bead or beads formed we would adjust the rubber bed to the desired operating width and form the large radial. This "eavetrough" example is cited only to help visualize the possibilities of radial forming with this equipment.

It is to be expected that a long tube or rod held to the flat die at its ends only, will by its own weight bend down in the middle, away from contact with the surface, or working portion, of the flat die. But this "bulging" away from the die will not be much, and upon the ram descent the tube or rod will be pressed against the flat die and must of necessity find its way into the "cavity" provided for it in the bed-part of this combination. Even if we use rubber in the bed-part, the bead or radial formation will be straight, because a "crooked" formation would necessitate the holding by force of the tube or rod in the crooked position. In other words, the male die (tube or rod) will conform to "least" resistance, and that is, in sheet metal forming, on a straight line.

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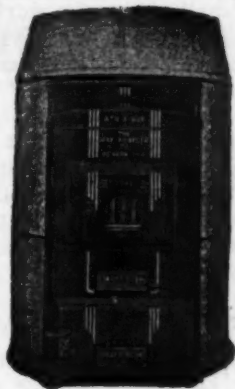
ALL THE FACTS about a great little time and labor saver for you — "E-Z-ON" Damper Regulators — are covered in this convenient new pocket-size folder. It shows how "E-Z-ON" Damper Regulators can be quickly and easily installed in many types of furnace duct damper arrangements that increase heating efficiency and assure smooth-operating, rattle-free dampers. Send for a copy today!

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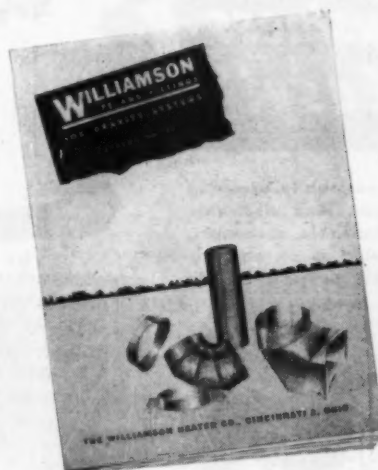
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The S-48 provides protection against overheating. Most states require this safety feature.

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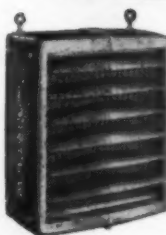
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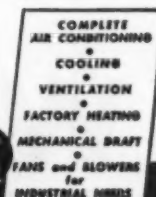
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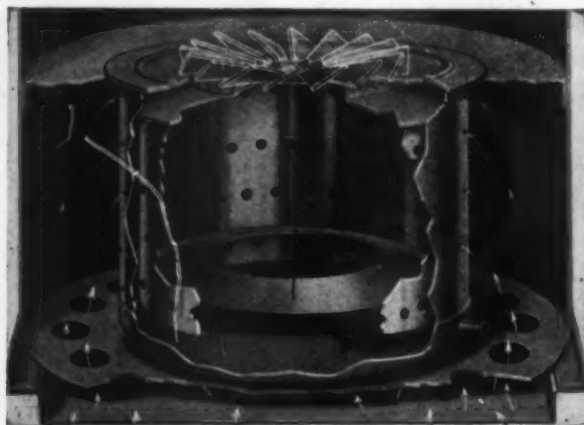
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Partnership or Corporation?

(Continued from page 77)

pending on years of coverage and average salary, but the maximum monthly payments for himself, wife and dependents cannot exceed \$85 a month.

Upon an employee's death, his estate receives a lump sum death benefit equal to 6 times the monthly benefit. This is true if his wife is not over 65 and there are no unmarried children under 18 or dependent parents. If there are such dependents, they obtain regular monthly benefits.

The following schedule shows the maximum monthly benefits (subject to the \$85 limit) which can be received:

MONTHLY BENEFITS BASED ON AVERAGE MONTHLY WAGE OF \$250

Years of coverage	Wage earner	Wife, child or parent*	Widow**
5	\$42	\$21 each	\$31.50
10	44	22 each	33
20	48	24 each	36
30	52	26 each	39
40	56	28 each	42

*Wife must be 65; child must be unmarried, dependent, under 18; wife and child (or children) can both receive benefits. Dependent parent, age 65, entitled to benefits only if son or daughter died leaving no surviving widow or dependent child. This is in addition to wage earner's benefits.

**Widow must be 65 but may be under 65 if she has a dependent, unmarried minor child under 18. Widow and child may both receive benefits.

The Old Age Benefits are usually the only worthwhile privileges a businessman receives by paying payroll taxes. However, in order to secure the benefits a self-employer must usually subject himself to the 3 per cent unemployment insurance tax which he does not want. He must, therefore, pay 5 per cent of his salary (up to a maximum of \$3,000) as contrasted with the 1 per cent cost to the ordinary employee. The 5 per cent is made up of 1 per cent contributed by the employee, 1 per cent by the employer (himself) and 3 per cent unemployment insurance tax.

Employee Benefit Plan

The peculiar quirk of the law which permits stockholder-employees to be treated as employees, but refuses to recognize working partners as employees, is also important if you are considering, or already have, a pension, profit-sharing or stock bonus plan. These plans are designed solely to benefit employees. If anyone other than an employee is covered, the plan will not qualify for tax or salary stabilization benefits. Thus, a stockholder-employee can become a beneficiary under one of these privileged forms of deferred compensation plans, but a working partner or a sole proprietor may not.

Capital Stock and Excess-Profits Tax

Corporations are subject to the capital stock and declared value excess profits taxes—the capital stock tax being the cost of avoiding the declared value excess profits tax. However, since both taxes are deductible in arriving at net income subject to income and excess profits tax, the cost of both taxes is reduced by a possible maximum of 95 per cent and a

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NO. 162 SHEAR

For cutting off angle iron up to 3" x 3" x 1/4" clean and square with no distortion of ends. Double cut blade shears both sides. Ball Bearing Screw Action provides maximum power with minimum effort. Easily operated by one man. For bench or floor use.



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Three standard Whitney-JENSEN units are conveniently positioned on a sturdy welded steel stand—the No. 4 Angle Iron Shear, No. 50 Mitre Notcher, and No. 51 Bender—to form this No. 455 Combination. Capacity 2" x 2" x 1/4" angle iron.

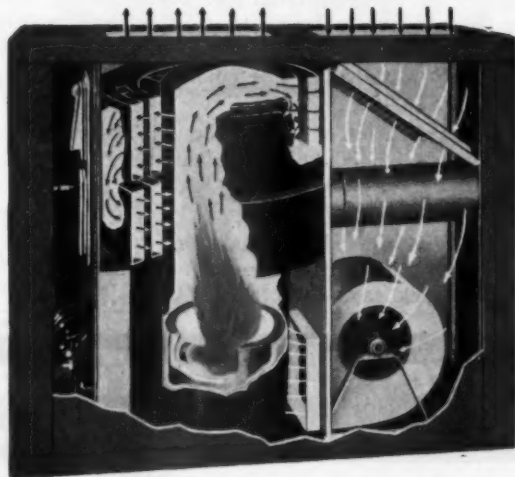
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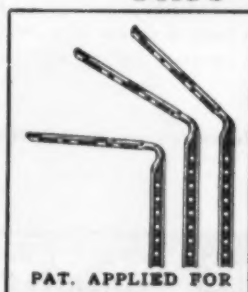
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New and improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies, thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

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minimum of 25 per cent. This ability to deduct the two taxes in arriving at income and excess profits tax reduces the taxes to the status of nuisance levies; rarely a serious factor in weighing the advantage of a corporation or a partnership.

State Income Taxes

Most states do not impose income or franchise taxes on unincorporated businesses. Even when such taxes exist, the rates are usually lower than those applicable to corporations. However, since the local taxes are deductible in arriving at the federal income and excess profits taxes, the gap between the state taxes imposed on corporate and non-corporate businesses will frequently narrow to the vanishing point. The sharply increased federal tax rates have made many taxes which formerly bulked large in a corporation-partnership comparison seem but minor impositions.

The same double taxation feature applicable to corporations under the federal income tax is also true of state taxes. Thus, a state franchise or income tax is paid by the corporation on its income while dividends paid out of that same income are again subject to state income tax on the individual stockholder (if the state has an income tax). But since state rates are comparatively low, state taxes will rarely be a major consideration.

How to Calculate Annual Tax Savings

The following example shows the calculation of the full annual tax bill of a business operation (a) as a corporation, (b) unincorporated. These are the facts on which the tax comparison shown below is based:

A and B are equal shareholders in X, a New York corporation. They are both married, with two children, and have no other source of income. Their personal deductions total \$700. (For simplicity it is assumed that the deductions allowed *only* for federal income taxes are equalled by deductions allowed *only* for New York State income tax purposes.) Each draws a salary of \$10,000 from the corporation. They expect the present income situation to remain relatively unchanged for the next few years and do not expect to pay any dividends. The corporation's excess profits credit is \$30,000.

The corporation's 1944 income is expected to show a net income of \$50,000, after deducting, among others, the following:

Officers' salaries	\$20,000
Payroll taxes on officers' salaries.....	240
New York State franchise tax.....	3,000
Capital stock tax.....	750

Majestic Heavy Duty Steel Stoker Furnace

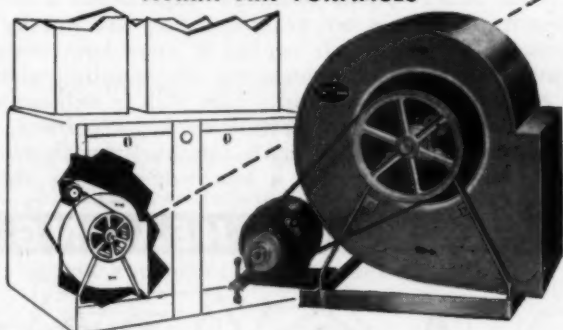
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OUT of the dismal prospect of war for years to come, sooner than we dared to hope, has come the glorious realization of Peace. Now, closer than ever before, we are approaching the ideal of Him whose message of Love and Understanding we have been celebrating for almost two thousand years... This time, let's grasp that ideal more firmly, and never let it go. With this hope firmly implanted in our hearts, we can, indeed, wish you and yours a very Merry Christmas.

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The "Stronghearted" Stoker

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Kruckman—Pressure Groups in Government

(Continued from page 73)


picture group have set up a force of 200 experts who will be on hand in the Capital constantly. As fast as the 5,000 offices and 25,000 dwelling facilities are vacated by the foreign government personnel who are slowly leaving after winding up their war work, the offices will be grabbed largely by trade, legal and other representatives eager to get settled in the Capital. They bring engineers, chemists and many other technicians. They are ready to meet any demand for information, any need for exact facts, any swift marshalling of information, without sending back home.

The labor organizations are probably just as well

staffed and housed as any other group. John L. Lewis and his United Mine Workers occupy the former home of the University Club, two blocks from the White House, a solid and outstanding building of five or more stories, built of stone, and covering a third of a block in a highly desirable location. In this are housed highly trained economists, engineers, accountants, chemists, mining specialists, sociologists, editors, and public relations experts.

These latter "public relations" experts are a development of the past ten years and they are worthy of special attention. Their capital is know-how, trained suavity, good clothes, engaging personalities, ability to entertain genially, infinite tact, skill in deliberately creating a sense of obligation in many persons, an up-to-the-minute and intimate familiarity with everything that is going on, a knowledge of the inter-

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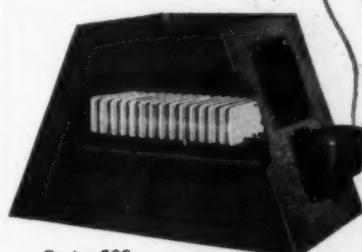
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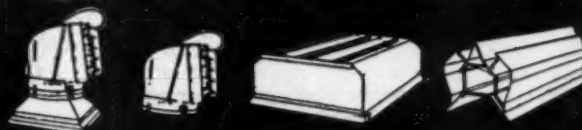
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relation of things and people, a fund from which to make loans, readiness to send candy, cigars, flowers, bottled goods and similar courtesies at the drop of the hat, and an acquaintance, friendships among the great, the near-great, the average, and the obscure. This acquaintance usually is enormous.

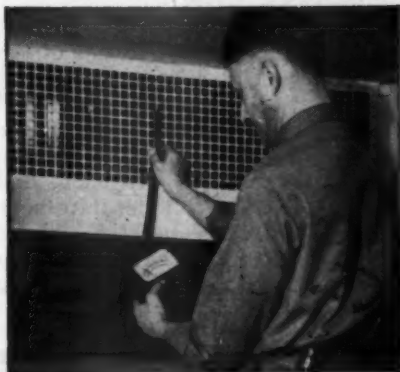
The effect of this system has been so trying upon members of the Congress that many say in private they intend to quit; they will either go home and peacefully practice whatever they practiced before or they may become public relations counselors themselves. One member of the House recently became so exasperated that she introduced a bill requiring those who lobby for specific interests and make it a profession to register under stringent conditions, and imposing heavy penalties in fines and imprisonment for violations. There is little probability such legislation can be enacted under existing conditions.

Not only the Congress must work under these conditions, but these men also have an effect upon the executive functions of the White House and the administrative machinery of the departments and agencies. It takes the most vigilant alertness of trained newspaper men to sift written, spoken and unspoken propaganda from pure fact. It should be the pride of this nation that the men and women in the Capital who channel its news, by and large, earnestly endeavor to send forth facts they think are substantiated. White House correspondents and the correspondents whose credentials are accepted for recognition in the Congressional Press Galleries have a code, and the code does not permit them to follow any vocation except that of gathering, writing or commenting upon the facts that make news. They do not represent any commercial or industrial or economic or other organizations save the publications or radio stations which employ them. In other words, a news writer or commentator is not able to become a public relations counselor and retain his standing in the profession of purveying news for any length of time. In theory and in practice, the correspondent serves only one purpose: to get and disseminate factual information or opinions based upon the information.

The confusion you now find in the news about President Truman, the Congress, and the activities of the Government agencies, in the opinion of many reporters, is chiefly due not to the fumbles at both ends of Pennsylvania Avenue, but to various sources. There are fumbles, and some of the fumbles are exasperating, but there were far more fumbles and worse fumbles in the preceding administration. The Roosevelt administration, by reason of the character of its head, was able to minimize the significance of its fumbles and often was able to capitalize them. Like the well known physician, it was able to bury its mistakes. Moreover, concentration of authority was accompanied by a condition that made public comment unwise and often dangerous.

As for Mr. Truman, it is reasonable to make an analytical summary. He was almost literally pitchforked into a situation for which neither he nor others were prepared. The aftermath of unpopularity to follow the war had been forecast for Roosevelt. President Truman clearly inherited the most bewildering mess and the greatest explosive potentials, here and elsewhere, that have ever confronted an American President. He dedicated himself to recapturing some of the elements of old-fashioned American democracy, conditioned by those social and economic changes which are symbolized by the amazing shift in the policies of Great Britain. He had the job of building

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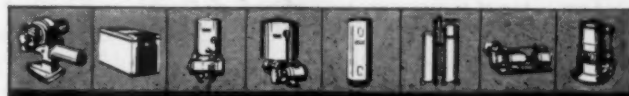


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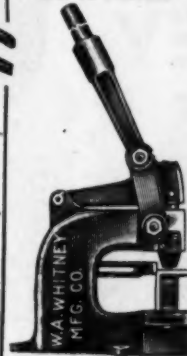
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Over and above all other problems, the President has had abroad the troubles with Russia, which involves Asia as well as Europe, and "all points East," and at home the opposition of the CIO, which seeks

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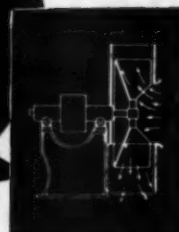


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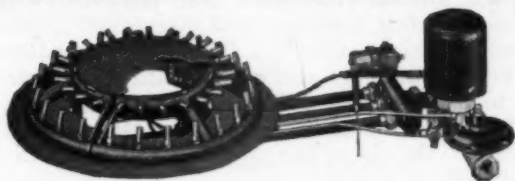
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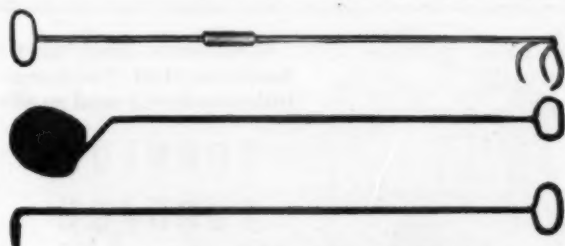
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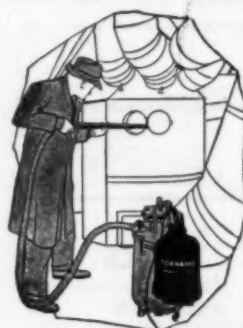
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to use its labor issues more to make social and political changes than to secure wage increases. At the same time, Congress has elected to be critical of its former associate, and all stops have been removed from the organs of public comment and discussion. Speech is absolutely free. Finally, the President has endeavored to give the authority and responsibility for their jobs back to the members of his Cabinet, to Congress, and to others who should be able to exercise the delegated authority. On the whole, he does not seem to have done badly.

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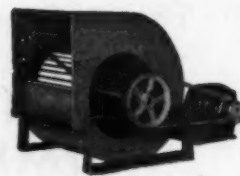
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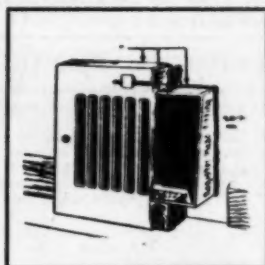


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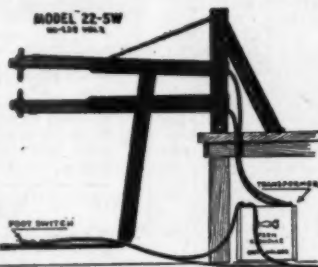
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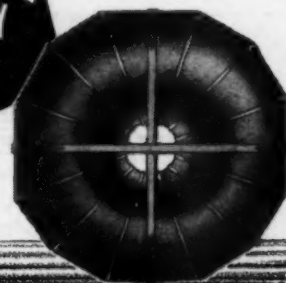
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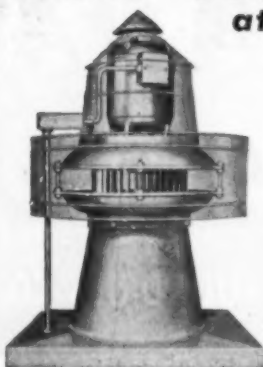
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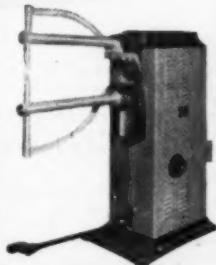
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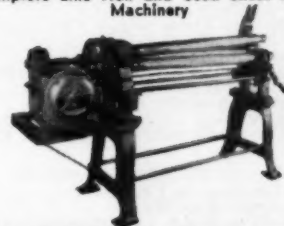
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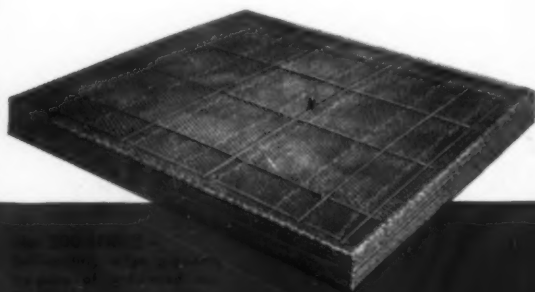
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